

Vol. IX
TRANSCRIPT OF RECORD

(Pages 3409 to 4088)

Supreme Court of the United States

OCTOBER TERM, 1944

No. 56

SOUTHERN PACIFIC COMPANY, APPELLANT,

vs.

**STATE OF ARIZONA, EX REL. JOE CONWAY,
ATTORNEY GENERAL OF THE STATE OF
ARIZONA**

**APPEAL FROM THE SUPERIOR COURT OF THE STATE OF ARIZONA,
COUNTY OF PIMA**

FILED APRIL 12, 1944.

7

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1944

No. 56

SOUTHERN PACIFIC COMPANY, APPELLANT,

vs.

STATE OF ARIZONA, EX REL JOE CONWAY,
ATTORNEY GENERAL OF THE STATE OF
ARIZONA

APPEAL FROM THE SUPERIOR COURT OF THE STATE OF ARIZONA,
COUNTY OF PIMA

VOL. IX

INDEX.

Record from Superior Court of State of Arizona in and for
County of Pima—Continued

Statement of evidence—Continued

Defendant's case—Continued

Original Print

291—Casualties to all classes of persons except trespassers, sustained in train and train service accidents, while on, employed on, or getting on or off passenger trains, reportable to the I.C.C. 1923 to 1939, incl. S. P. lines in State of Nevada	5888	3409
292—Casualties to all classes of persons except trespassers, sustained in train and train service accidents while on, employed on, or getting on or off passenger trains, reportable to the I.C.C. years 1923-1939, inclusive, S. P. Lines in State of Arizona ..	5892	3412
293—Highway grade crossing accidents in which automobiles were involved, all railroads, State of Arizona, reflected by statistics of I.C.C. and those which occurred on lines of S. P. Co., years 1923-1939, inclusive	5902	3422

JUDD & DETWEILER (INC.), PRINTERS, WASHINGTON, D. C., JULY 20, 1944

Record from Superior Court of State of Arizona in and for
County of Pima—Continued

Statement of evidence—Continued

Defendant's exhibits—Continued

	Original	Print
294—Detail of casualties to all classes of persons, except trespassers, operation of passenger trains, S. P. Co., State of Arizona, March and April, 1940.....	5903	3423
295—Detail of train and train service accidents road freight train operation reportable to the I.C.C., S. P. Co., in State of Arizona, April 1940.....	5904	3424
296—A. T. & S. F. Ry., Casualties to road freight trainmen and enginemen on duty while on or off road freight trains (through, local and mixed). Main line territory between Clovis and Gallup, New Mexico, compared with main line territory between Gallup, N. M., and Needles, Calif., as reported to the I.C.C., years 1923-1939, inclusive....	5905	3425
297—S. P. Co., Pacific Lines, estimated cost of a terminal at the Arizona-New Mexico State Line for the reconstituting of freight trains..	5906	3426
298—S. P. Co., Pacific Lines, Yuma, Ariz. to El Paso, Tex. via Gila and Lordsburg, estimated number of meets and passes eliminated by long train operation June and August, 1938, expanded to annual basis.....	5907	3427
299—S. P. Co., Pacific Lines, Redispatch study—June and August, 1938, extra-territorial effect of Arizona Train Limit Law between Arizona-New Mexico State Line and El Paso, Texas.....	5909	3429
305—Statement of main track mileage, S. P. Co. main and branch lines, State of Nevada and Arizona, years 1923-1939.....	5910	3430
313—Classes and numbers of employees on the Tucson Division for each of the calendar years 1930-1940, inclusive, transportation division.....	5911	3431
314—AT&SF freight tonnage ratings of locomotives between Needles, Calif., and Clovis, New Mexico.....	5912	3432
315—Redispatch Study — locomotive mileage, Yuma, Ariz., to El Paso, Tex., for the period June and Aug. 1938.....	5913	3433
316—Same as above for period April 4-30, 1940. Actual operation compared with redispatched operation with no restriction and using AC power and long sidings.....	5914	3434

Record from Superior Court of State of Arizona in and for
County of Pima—Continued

Statement of evidence—Continued

Defendant's exhibits—Continued

Original Print

317—Redispatch study—locomotive shop repairs, Yuma, Ariz., to El Paso, Texas, for period June and Aug. 1938.....	5915	3435
318—Same as above for period April 4-30, 1940. Actual operation compared with redis- patched operation with no restriction and using AC power and long sidings.....	5916	3436
Plaintiff's exhibits:		
321—Form S-2370, Time Return and Delay Re- port of engine and train employees, April 12, 1940.....	5917 ²	3437
322—Conductor's Time Return and Delay Re- port, April 13, 1940.....	5918	3438
323-324-325—Form T's—Hausman Accidents.....	5919	3439
326—Warning to caretakers and others.....	5925	3447
327—Excerpts from Santa Fe instructions for operating and maintaining air-brake appa- ratus.....	5927	3445
328—Excerpts from S. P. Co. (Pac. Lines) air brake rules and regulations.....	5935	3454
334—Highway grade crossing accidents where auto involved: Table 24, I.C.C. Accident Bulle- tin, Arizona-New Mexico-Nevada, 1929- 1939, incl.....	5941	3461
335—Highway grade crossing accidents, Table 24, I.C.C. Accident Bulletin, Arizona-New Mexico-Nevada, 1929-1939, inclusive.....	5942	3462
336—Grade crossing accidents classified as to trains striking autos and autos running into trains. I.C.C. Accident Bulletin, Table 50, Years 1935 to 1939, inclusive.....	5943	3463
337—Casualties to non-trespassers, Table 51, I.C.C. Accident Bulletins, Arizona-Nevada.....	5944	3464
338—S. P. Co., Pac. Lines, Casualties to em- ployees. Train and train service acci- dents. Freight service in the State of New Mexico, year 1930.....	5945	3465
339—Accident report of the Santa Fe occurring on the Albuquerque Division on July 27, 1939.....	5952	3472
350—Preliminary revised population estimate for continental United States.....	5965	3482
351—S. P. Co., Pac. Lines. Casualties to em- ployees, Los Angeles Division, freight service, train and enginemen, year 1930.....	5969	3483
362—S. P. Co., Pac. Lines, Casualties to passengers and passenger employes, train and train service accidents, State of New Mexico, year 1930.....	5990	3501

Record from Superior Court of State of Arizona in and for
County of Pima—Continued

Statement of evidence—Continued

Plaintiff's exhibits—Continued

	Original	Print
363—Same as above for Los Angeles Division.....	5996	3507
364—S. P. Co., Pacific Lines in New Mexico, Casualties to train and engine service employees, year 1940.....	6006	3518
365—S. P. Co., Pacific Lines, Los Angeles Division, Casualties to train and engine service employees, year 1940.....	6008	3519
366—Same as above for State of Arizona.....	6011	3522
367—Same as above for Salt Lake Division.....	6013	3524
367-a—Casualties to passengers and passenger employees, year 1940; S. P. Co., Pacific Lines, State of Nevada.....	6016	3526
368—Same as above, Lines in New Mexico.....	6017	3527
369—Same as above for the State of Arizona.....	6018	3528
370—Same as above for Los Angeles Division.....	6020	3529
382—I.C.C. Bureau of Statistics, Accident Bulletin 105, Calendar Year 1936, Table 24.....	6021	3530
383—Same as above, Table 50.....	6022	3531
384—Same as above, Table 51.....	6023	3532

Defendant's exhibits:

386—Comparison of casualties to employees on duty, and non-trespassers. Road freight train operation sustained in train and train service accidents, reported to the I.C.C., years 1930-1940, inclusive. S. P. Co. Pac. Lines, Los Angeles Division.....	6024	3533
387—Same as above for the State of New Mexico.....	6040	3548
388—Train accidents reported to the I.C.C., years 1930-1940 inclusive, S. P. Co., Pacific Lines, State of New Mexico.....	6049	3558
389—Comparison of number and accident rate per million freight train miles and per one hundred million freight train car miles. Derailment due to defects in or failures of freight car equipment, New Mexico, Arizona and Nevada, 1930-1940 inclusive.....	6056	3565
390—Train accidents, showing classes and causes, Class I Railroads of the U. S.; reflected by the statistics of the I. C. C., years 1923-1939, incl.....	6057	3566
391—Train accidents, classified, casualties sustained therein, etc. State of Arizona.....	6058	3567
392—Same as above for State of Nevada.....	6059	3568
393—Consist of train No. 3, departing Tucson April 12, 1940, Conductor G. Shaw, Engineer B. Cheek.....	6060	3569
394—Consist train No. 44, departing Yuma April 13, 1940.....	6061	3570

Record from Superior Court of State of Arizona in and for
County of Pima—Continued

Statement of evidence—Continued

Defendant's exhibits—Continued

	Original	Print
395—1940 service records of conductors A. T. Ash, L. A. Fail, and E. V. Shaw	6062	8571
396—American Railway Assn., Mechanical Division, specifications for freight brakes, standard, adopted 1933	6063	3572
397—Delays to freight and passenger trains associated with equipment, or defects therein as reported by conductors on time returns and delay reports, Jan. 1 to June 30, 1940, Lordsburg, New Mexico, to El Paso, Texas	6069	3578
Findings of fact and conclusions of law	6070	3879
Index to findings and conclusions	6071	3879
Note to findings and conclusions	6077	3887
Judgment	6278	3887
Memorandum opinion, Udall, J.	6281	4042
Notice of appeal	6296	4054
Proceedings in Supreme Court of Arizona	6297	4055
Opinion, Stanford, J.	6297	4055
Dissenting opinion, Ross, J.	6313	4068
Mandate	6319	4072
Judgment of Superior Court on mandate	6323	4073
Petition for appeal	6324	4074
Assignments of error	6328	4077
Order allowing appeal	6331	4081
Bond on appeal	(omitted in printing)	6336
Citation and service	(omitted in printing)	6341
Præcipe for transcript of record	6343	4082
Appellee's præcipe for additional record	6347	4085
Clerk's certificate	(omitted in printing)	6349
Statement of points to be relied upon	6353	4086
Stipulation as to printing of record	6356	4087
Order noting probable jurisdiction	6358	4088

Defendant's Exhibit No. 291 (Witness J. C. Sullivan)
Feb. 6, 1941

CASUALTIES TO
ALL CLASSES OF PERSONS, EXCEPT TRESPASSERS
SUSTAINED IN TRAIN AND TRAIN SERVICE ACCIDENTS
WHILE ON, EMPLOYED ON, OR GETTING ON OR OFF

PASSENGER TRAINS

REPORTABLE TO THE INTERSTATE COMMERCE COMMISSION
YEARS 1923 TO 1939, INCLUSIVE
SOUTHERN PACIFIC COMPANY LINES IN
STATE OF NEVADA

	YEAR	NUMBER OF REVENUE PASSENGERS CARRIED	REVENUE PASSENGERS ONE MILE (THOUSANDS)	PASSENGER TRAIN MILES (THOUSANDS)	NUMBER OF CASUALTIES TO PERSONS															CASUALTIES TO PASSEN MILLION PASSENGERS CARRIED		100 MILLIO PASSENGER MILES	
					PASSENGERS		TRAIN MEN		EMPLOYEES ON DUTY				ALL OTHER		TOTAL ALL PERSONS EXCEPT TRESPASSERS								
					KILLED	INJURED	KILLED	INJURED	KILLED	INJURED	OTHER EMPLOYEES	TOTAL EMPLOYEES	KILLED	INJURED	NON-TRESPASSERS	TRESPASSERS	KILLED	INJURED					
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)	(t)				
(1)	1923	475,677	112,053	1,559	-	-	-	1	-	1	-	-	-	4	-	-	-	4	-	-			
(2)	1924	452,520	106,561	1,562	-	3	-	4	-	1	-	-	-	5	-	2	-	10	0.63	2.84			
(3)	1925	484,315	105,112	1,511	-	1	-	-	2	-	-	1	2	1	-	-	2	2	2.20	.95			
(4)	1926	423,408	103,405	1,540	-	1	-	-	-	-	-	3	-	3	-	-	-	4	2.36	.97			
(5)	1927	408,922	102,304	1,534	-	1	-	-	-	1	-	-	-	1	-	-	-	2	2.44	.98			
(6)	1928	384,794	101,200	1,525	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-			
(7)	TOTAL 1923-28	2,599,636	629,735	9,361	-	6	-	5	2	3	-	6	2	14	-	3	2	23	2.31	.95			
(8)	1929	365,946	101,126	1,418	-	1	-	1	-	-	-	1	-	2	-	-	-	3	2.59	.99			
(9)	1930	323,799	87,949	1,650	-	1	-	-	-	-	-	-	-	-	-	-	-	1	3.09	1.14			
(10)	1931	294,497	79,954	1,273	-	3	-	1	-	-	-	-	-	-	-	-	-	4	10.12	3.95			
(11)	1932	199,132	52,741	1,087	-	3	1	-	-	-	-	-	1	-	-	-	1	3	15.06	5.99			
(12)	1933	166,326	45,833	963	-	-	-	-	-	-	-	-	-	-	-	2	-	2	-	-			
(13)	1934	198,144	60,830	1,055	-	1	-	-	-	-	-	-	-	-	-	1	-	2	5.05	1.64			
(14)	TOTAL 1929-34	1,592,459	434,438	7,049	-	9	1	2	-	-	-	1	1	3	-	3	1	15	5.65	2.07			
(15)	1935	228,701	70,232	1,056	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
(16)	1936	277,141	89,924	1,179	-	5	-	1	-	-	-	1	-	2	-	1	-	5	7.22	2.22			
(17)	1937	320,942	107,126	1,360	-	2	-	-	-	2	-	-	-	2	-	1	-	5	6.23	1.87			
(18)	1938	305,139	102,447	1,238	-	-	-	-	-	1	-	-	-	1	-	-	-	1	-	-			

TOTAL ALL EXCEPT PASSENGERS INJURED	CASUALTIES TO PASSENGERS PER			CASUALTIES TO EMPLOYEES PER MILLION TRAIN MILES	CASUALTIES TO OTHER NON- TRASPASSERS PER MILLION TRAIN MILES.	CASUALTIES TO ALL PERSONS PER MILLION TRAIN MILES
	MILLION PASSENGERS CARRIED	100 MILLION PASSENGER MILES	MILLION TRAIN MILES			
(r)	(s)	(t)	(u)	(v)	(w)	(x)
4	-	-	-	2.41	-	2.41
10	6.63	2.84	1.92	3.20	1.26	6.40
2	2.20	.95	.65	1.99	-	2.65
4	2.36	.97	.65	1.95	-	2.60
2	2.44	.98	.64	.64	-	1.28
1	-	-	-	-	.66	.66
23	2.31	.95	.64	1.71	.32	2.67
3	2.59	.99	.62	1.23	-	2.85
1	3.09	1.14	.60	-	-	.60
4	10.12	3.95	2.35	.78	-	3.13
3	15.06	5.60	2.76	.92	-	3.68
2	-	-	-	-	2.08	2.08
2	5.05	1.64	1.94	-	.94	1.88
15	5.65	2.07	1.18	.52	.39	3.09
-	-	-	-	-	-	-
5	7.22	2.22	1.70	1.70	.65	4.24
5	6.23	1.87	1.45	1.45	.72	3.62
1	-	-	-	.81	-	.81
34	83.51	23.73	22.43	19.33	2.32	44.08
45	22.31	6.71	5.37	4.98	.81	11.06
63	18.46	3.08	2.07	2.16	.47	4.71

16 passengers, 1 trainman and 11 other employees injured in derailment

SOUTHERN PACIFIC COMPANY LINES IN
STATE OF NEVADA

	YEAR	NUMBER OF REVENUE PASSENGERS CARRIED	REVENUE PASSENGERS ONE MILE (THOUSANDS)	PASSENGER TRAIN MILES (THOUSANDS)	NUMBER OF CASUALTIES TO PERSONS														CASUALTIES TO PASSENGERS MILLION PASSENGERS CARRIED MILES			
					PASSENGERS		EMPLOYEES ON DUTY										ALL OTHER NON-TRESPASSERS				TOTAL ALL PERSONS EXCEPT TRESPASSERS	
							TRAINMEN		ENGINEEREN		OTHER EMPLOYES		TOTAL EMPLOYES									
							KILLED	INJURED	KILLED	INJURED	KILLED	INJURED	KILLED	INJURED	KILLED	INJURED						
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)	(t)			
(1)	1923	475,677	112,053	1,459	-	-	-	1	-	1	-	2	-	4	-	-	-	4	-	-		
(2)	1924	452,520	108,561	1,562	-	3	-	4	-	1	-	-	-	5	-	2	-	10	6.63	2.84		
(3)	1925	454,315	105,112	1,511	-	1	-	-	2	-	-	1	2	1	-	-	2	2	2.20	.95		
(4)	1926	423,408	103,405	1,540	-	1	-	-	-	-	-	3	-	3	-	-	-	4	2.36	.97		
(5)	1927	408,922	102,304	1,554	-	1	-	-	-	1	-	-	-	1	-	-	-	2	2.44	.98		
(6)	1928	384,794	101,200	1,525	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-		
(7)	TOTAL 1923-28	2,599,636	629,735	9,361	-	6	-	5	2	3	-	6	2	14	-	3	2	23	2.31	.95		
(8)	1929	365,946	101,125	1,418	-	1	-	1	-	-	-	1	-	2	-	-	-	3	2.59	.99		
(9)	1930	323,794	87,949	1,650	-	1	-	-	-	-	-	-	-	-	-	-	-	1	3.09	1.14		
(10)	1931	296,497	95,954	1,275	-	3	-	1	-	-	-	-	-	1	-	-	-	4	10.12	3.95		
(11)	1932	199,183	52,741	1,087	-	3	1	-	-	-	-	-	1	-	-	-	1	3	15.06	5.69		
(12)	1933	188,396	55,833	943	-	-	-	-	-	-	-	-	-	-	-	2	-	2	-	-		
(13)	1934	198,144	60,830	1,055	-	1	-	-	-	-	-	-	-	-	-	1	-	2	5.05	1.64		
(14)	TOTAL 1929-34	1,592,459	434,438	5,449	-	9	1	2	-	-	-	1	1	3	-	3	1	15	5.65	2.07		
(15)	1935	228,701	70,232	1,056	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
(16)	1936	277,141	89,924	1,179	-	1	-	1	-	-	-	1	-	2	-	1	-	5	7.22	2.22		
(17)	1937	320,942	107,126	1,360	-	2	-	-	-	2	-	-	-	2	-	1	-	5	6.23	1.87		
(18)	1938	305,139	102,447	1,238	-	-	-	-	-	1	-	-	-	1	-	-	-	1	-	-		
(19)	1939	347,270	122,211	1,293	9	29	-	1	-	-	13	11	13	12	1	2	23	34	83.51	23.73		
(20)	TOTAL 1935-39	1,479,193	491,940	6,148	9	24	-	2	-	3	13	12	13	17	1	4	23	45	22.31	6.71		
(21)	GRAND TOTAL	5,671,268	1,556,113	23,158	9	39	1	9	2	6	13	19	16	34	1	10	26	83	8.46	3.06		

Figures for year 1939, for 4 years 1935-1939 and the Grand Total, includes 9 passengers, 13 other employees and 1 other non-trespasser killed; and 18 passengers, 11 trainmen and 11 other employees injured. CITY OF SAN FRANCISCO at Harvey, Nevada, August 12, 1939, cause, by malicious tampering with the track.

Figures for year 1939, for 4 years 1935-1939 and the Grand Total, includes 9 passengers, 13 other employees and 1 other non-trespasser killed; and 18 passengers, 11 trainmen and 11 other employees injured. CITY OF SAN FRANCISCO at Harvey, Nevada, August 12, 1939, cause, by malicious tampering with the track.

	DATE	LOCATION	I.C.C. CLASS	TRAIN NUMBER	NUMBER OF CARS IN TRAIN	SPEED (M.P.H.)	CLASS OF PERSON INJURED	ESTIMATED DEBILITY (DAYS)	DETAILS AND CIRCUMSTANCES OF ACCIDENT
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
	<u>1928</u>								
(23)	10-21	Reno	S-g	28	12	4	Non-trespasser	18	Visitor on train, fell and bruised head and face attempting to get off moving train.
	<u>1929</u>								
(24)	1-6	Verdi	S-j	10	12	25	Passenger	8	Fell and caught finger between door and door frame.
(25)	7-5	Sparks	S-g	20	15	3	Passenger brakeman	12	Right shin bruised, missing hand rail while boarding engine.
(26)	8-29	Carlin	S-j	28	15	15	Obva. car porter	10	Eye lid pierced when spring on observation car curtain slipped from hand.
	<u>1930</u>								
(27)	5-23	Montello	S-j	2-28	13	3	Passenger	42	Broken collar bone caused by fall when train made rough stop.
	<u>1931</u>								
(28)	1-4	Reno	S-g	21	11	Standing	Passenger	90	Broken leg caused by fall when detraining due to heel coming off shoe.
(29)	1-14	Carlin	S-g	9	11	Standing	Passenger	30	Slipped on frozen ground when detraining from coach.
(30)	2-24	Yreka	S-j	10	14	50	Passenger	15	Fell on broken bottle and cut hand.
(31)	8-9	Elburn	S-g	19	10	Standing	Passenger brakeman	14	Wrenched knee getting off coach.
	<u>1932</u>								
(32)	2-18	Reno	S-j	22	11	20	Passenger brakeman	Killed	Apparently fell from rear platform of car.
(33)	5-23	Cobre	S-j	1-20	13	5	Passenger	30	Lost balance and fell in car when train stopped.
(34)	6-17	Toulon	S-j	20	12	50	Passenger	21	Fainted and fell, striking head on door stop.
(35)	7-9	Fuselon	S-g	21	11	40	Passenger	Died	Demented passenger jumped through window of coach.
	<u>1933</u>								
(36)	3-2	Wells	S-g	10	12	12	Pullman porter	60	Fractured hip, when missed hand-hold attempting to get on moving train.
(37)	10-14	Malay	S-j	1-28	11	Standing	Express messenger	30	Broken foot due to stumbling and falling over box while unloading express.
	<u>1934</u>								
(38)	6-7	Thiabe	S-g	21	12	40	Passenger	Died	Demented passenger jumped from train.
(39)	7-19	Colsonia	S-j	9	8	Unknown	Railway mail clerk	25	Fractured elbow when fell backward in car due to mail catcher arm breaking.
	<u>1935</u>								
(40)						NONE			

	DATE	LOCATION	I.C.C. CLASS	TRAIN NUMBER	NUMBER OF CARS IN TRAIN	SPEED (M.P.H.)	CLASS OF PERSON INJURED	ESTIMATED DISABILITY (DAYS)	DETAILS AND CIRCUMSTANCES OF ACCIDENT
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
	<u>1936</u>								
(41)	1-10	Oreana	S-g	14	14	35	Passenger	5	Jumped from moving train account mentally unbalanced.
(42)	2-27	Cotre	S-j	30	10	Standing	Express messenger	10	Back strained when car door came off track when closing.
(43)	5-17	Hazen	S-j	27	16	50	4th cook	6	Ankle sprained when heel of shoe caught in floor rack.
(44)	10-24	Lovelock	S-j	1-9	16	2	Passenger	10	Lost balance and stepped on buffer plate resulting in foot being caught between apron and buffer.
(45)	12-7	Sparks	S-i	210	10	6	Passenger brakeman	30	Struck by engine which had been detached from its train.
	<u>1937</u>								
(46)	2-26	Pallade	D-e	2-21	11	25-30	Passenger engineer Passenger fireman U.S. mail clerk	10 20 20	Engine and 6 cars derailed account striking rocks on track.
(47)	3-8	Battle Mountain	S-j	1-21	12	Starting	Passenger	20	Fell to floor of car due to alleged jerk when train started.
(48)	4-16	Argo	D-c	27	13	60	Passenger	2	Claims thrown to floor in club car when sudden stop occurred due to failure of locomotive driver tire.
	<u>1938</u>								
(49)	4-17	Conna	S-j	87	13	60	Passenger fireman	12	Struck thumb against back of cab.
	<u>1939</u>								
(50)	7-12	Carlin	S-g	87	16	Standing	Passenger	30	Slipped and fell while getting off coach.
(51)	8-12	Harney	D-h	101	14	60	9 passengers 18 passengers 8 waiters 3 cooks 2 stewards Pullman porter Pantryman 2 cooks 6 waiters Bartender Stewardess Passenger conductor	Killed 5 to 60 Killed Killed Killed Killed Died 10 to 60 10 to 60 10 11 60	Train derailed due to malicious tampering with track.
(52)	9-17	Sparks	S-j	21	16	Standing	Passenger brakeman (off duty)	10	Foot slipped, lost balance and fell to ground, while reaching down to close vestibule door.
(53)	11-5	Verdi	S-j	87	17	30	Passenger	10	Elderly passenger (75 yrs) stood up in seat to remove baggage and hat from rack, lost balance and fell from seat to floor.
(54)	12-10	Elko	S-j	21	12	30	Express messenger	30	Box of express fell from pile and struck foot.

Defendant's Exhibit No. 292 (Witness J.J. Sullivan)
Feb. 6, 1941

CASUALTIES TO
ALL CLASSES OF PERSONS, EXCEPT TRESPASSERS,
SUSTAINED IN TRAIN AND TRAIN SERVICE ACCIDENTS
WHILE ON, EMPLOYED ON, OR GETTING ON OR OFF
PASSENGER TRAINS
REPORTABLE TO THE INTERSTATE COMMERCE COMMISSION
YEARS 1923 TO 1939, INCLUSIVE
SOUTHERN PACIFIC COMPANY LINES IN
STATE OF ARIZONA

	YEAR	NUMBER OF REVENUE PASSENGERS CARRIED	REVENUE PASSENGERS ONE MILE (THOUSANDS)	PASSENGER TRAIN MILE (THOUSANDS)	NUMBER OF CASUALTIES TO PERSONS														CASUALTIES TO PASSENGERS PER:		
					PASSENGERS		EMPLOYEES ON DUTY						ALL OTHER NON-TRESPASSERS		TOTAL ALL PERSONS EXCEPT TRESPASSERS		MILLION PASSENGERS CARRIED	100 MILLION PASSENGER MILES	MILLION TRAIN MILES		
							TRAINMEN		ENGINEER		OTHER EMPLOYEES									TOTAL EMPLOYEES	
							KILLED	INJURED	KILLED	INJURED	KILLED	INJURED								KILLED	INJURED
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)	(t)	(u)	
(1)	1923	446,417	115,156	1,259	-	5	-	-	-	-	-	3	-	3	-	2	-	10	11.15	4.34	5.97
(2)	1924	452,223	117,411	1,330	-	12	-	1	1	2	-	5	1	8	-	1	1	11	26.54	10.22	1.02
(3)	1925	511,531	132,862	2,011	-	6	-	1	-	2	-	6	-	9	-	-	-	5	11.78	4.52	3.98
(4)	1926	502,867	134,753	1,945	-	4	-	2	-	3	-	6	-	1	-	-	-	15	7.35	2.97	3.06
(5)	1927	471,341	133,450	2,012	-	7	-	5	-	8	-	3	-	10	-	-	-	17	14.83	5.25	5.48
(6)	1928	457,750	131,257	2,015	1	2	-	2	-	3	-	1	-	6	-	2	1	10	6.55	2.29	1.49
(7)	TOTAL 1923-28	2,844,129	764,889	10,572	1	34	-	11	1	12	-	24	1	47	-	5	2	88	13.01	4.84	3.50
(8)	1929	482,293	139,928	2,039	-	1	-	2	1	1	-	3	1	6	-	-	1	7	2.07	.71	.49
(9)	1930	428,919	128,661	1,964	-	9	-	-	-	2	-	3	-	5	-	1	-	15	20.26	7.00	4.56
(10)	1931	374,963	113,920	1,760	1	10	-	-	2	-	-	3	2	3	-	-	3	13	29.34	9.66	6.25
(11)	1932	342,936	75,231	1,412	-	2	-	-	-	2	-	5	-	7	-	1	-	10	8.32	2.65	1.42
(12)	1933	203,158	63,550	1,203	-	2	-	-	-	-	-	-	-	-	-	1	-	3	9.88	3.15	1.66
(13)	1934	267,518	80,835	1,214	-	5	-	1	-	1	-	1	-	3	-	2	-	10	18.69	6.19	4.12
(14)	TOTAL 1929-34	1,999,786	602,134	9,592	1	29	-	3	3	6	-	15	3	24	-	5	4	56	15.00	4.98	3.13
(15)	1935	327,246	100,559	1,311	-	10	-	1	-	4	-	2	-	7	-	1	-	18	30.56	9.94	7.53
(16)	1936	406,966	127,930	1,731	1	8	-	2	-	1	-	6	-	9	-	-	1	17	22.01	7.04	5.20

ALL EXCEPT SEVERE INJURED	CASUALTIES TO PASSENGERS PER:			CASUALTIES TO EMPLOYEES PER MILLION TRAIN MILES	CASUALTIES TO OTHER NON- TRESPASSERS PER MILLION TRAIN MILES	CASUALTIES TO ALL PERSONS PER MILLION TRAIN MILES
	MILLION PASSENGERS CARRIED	100 MILLION PASSENGER MILES	MILLION TRAIN MILES			
(r)	(s)	(t)	(u)	(v)	(w)	(z)
10	11.15	4.34	3.97	2.36	1.56	7.94
11	26.56	10.22	1.02	6.77	.73	18.54
5	11.73	4.52	2.98	4.46	-	7.46
15	7.95	2.97	1.06	5.66	-	7.71
17	14.63	5.25	3.46	4.67	-	8.45
10	5.55	2.29	1.49	2.95	.99	5.46
69	13.01	4.94	3.50	4.54	.47	8.51
7	2.07	.71	.49	3.43	-	3.92
15	20.98	7.00	4.56	2.55	.51	7.08
13	29.34	9.66	6.25	2.84	-	9.09
10	8.23	2.66	1.42	4.96	.71	7.08
3	9.84	3.15	1.66	-	.83	2.49
10	19.49	6.19	4.12	2.47	1.65	8.24
56	15.00	4.99	3.13	2.81	.52	6.46
18	30.56	9.94	7.53	5.34	.76	13.73
17	22.01	7.04	5.20	5.20	-	10.40
27	35.71	11.25	9.07	4.80	.53	14.41
10	10.26	3.29	2.56	3.83	-	6.39
14	15.94	5.00	3.72	5.23	-	9.14
86	23.23	7.41	5.74	4.87	.25	10.86
232	16.56	5.65	4.01	4.05	.43	8.48

REPORT TO THE INTERSTATE COMMERCE COMMISSION
YEARS 1923 TO 1939, INCLUSIVE
SOUTHERN PACIFIC COMPANY LINES IN
STATE OF ARIZONA

	YEAR	NUMBER OF REVENUE PASSENGERS CARRIED	REVENUE PASSENGERS ONE MILE (THOUSANDS)	PASSENGER TRAIN MILE (THOUSANDS)	NUMBER OF CASUALTIES TO PERSONS														CASUAL MILE PASSENGER CARRIED
					PASSENGERS		TRAINMEN		ENGINEERS		OTHER EMPLOYEES		TOTAL EMPLOYEES		ALL OTHER NON-TRESPASSERS		TOTAL ALL PERSONS EXCEPT TRESPASSERS		
					KILLED	INJURED	KILLED	INJURED	KILLED	INJURED	KILLED	INJURED	KILLED	INJURED	KILLED	INJURED	KILLED	INJURED	
					(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	
(1)	1923	448,417	115,156	1,259	-	5	-	-	-	-	-	3	-	3	-	2	-	10	11.1
(2)	1924	452,223	117,411	1,330	-	12	-	1	1	2	-	5	1	8	-	1	1	11	26.5
(3)	1925	511,531	132,862	2,011	-	6	-	1	-	2	-	6	-	9	-	-	-	5	11.7
(4)	1926	502,867	134,753	1,945	-	4	-	2	-	3	-	6	-	1	-	-	-	15	7.9
(5)	1927	471,341	133,450	2,012	-	7	-	5	-	2	-	3	-	10	-	-	-	17	14.0
(6)	1928	457,750	131,257	2,015	1	2	-	2	-	3	-	1	-	6	-	2	1	10	6.5
(7)	TOTAL 1923-28	2,844,129	764,869	10,572	1	36	-	11	1	12	-	21	1	47	-	5	2	88	13.0
(8)	1929	482,293	139,923	2,039	-	1	-	2	1	1	-	3	1	6	-	-	1	7	2.0
(9)	1930	428,919	128,661	1,964	-	9	-	-	-	2	-	3	-	5	-	1	-	15	20.9
(10)	1931	374,963	113,920	1,760	1	10	-	-	2	-	-	3	2	3	-	-	3	13	22.3
(11)	1932	342,935	75,231	1,412	-	2	-	-	-	2	-	5	-	7	-	1	-	10	8.2
(12)	1933	203,158	63,359	1,203	-	2	-	-	-	-	-	-	-	-	-	1	-	3	9.5
(13)	1934	267,518	80,835	1,214	-	5	-	1	-	1	-	1	-	3	-	2	-	10	18.6
(14)	TOTAL 1929-34	1,999,786	602,134	9,592	1	29	-	3	3	6	-	15	3	24	-	5	4	59	15.0
(15)	1935	327,246	100,559	1,311	-	10	-	1	-	4	-	2	-	7	-	1	-	18	30.5
(16)	1936	408,966	127,930	1,731	1	8	-	2	-	1	-	6	-	9	-	-	1	17	22.0
(17)	1937	476,096	151,068	1,874	-	17	-	-	-	4	-	5	-	9	-	1	-	27	35.7
(18)	1938	386,960	121,504	1,565	-	4	-	3	-	1	-	2	-	6	-	-	-	10	10.2
(19)	1939	378,714	120,108	1,531	-	6	-	-	-	2	-	6	-	8	-	-	-	14	15.8
(20)	TOTAL 1935-39	1,979,981	621,169	8,012	1	45	-	6	-	12	-	21	-	39	-	2	1	86	23.2
(21)	GRAND TOTAL	8,623,896	1,989,192	23,176	3	110	-	20	4	30	-	60	4	110	-	12	7	232	16.5

SOURCE: Columns (b), (c) and (d), Annual Reports of Southern Pacific Company to Arizona Corporation Commission.

Columns (e) to (r) inclusive, Form T accident reports of Southern Pacific Company to the Interstate Commerce Commission.

(Sheet 2 of 4 sheets)

DETAIL OF CASUALTY TO ALL CLASSES OF PERSONS, EXCEPT TRESPASSERS
SUSTAINED IN TRAIN AND TRAIN SERVICE ACCIDENTS, WHILE ON, EMPLOYED ON, OR GETTING ON OR OFF PASSENGER TRAINS
REPORTABLE TO THE INTERSTATE COMMERCE COMMISSION

YEARS 1923 TO 1939, INCLUSIVE
SOUTHERN PACIFIC COMPANY LINES IN
STATE OF NEVADA

	DATE (a)	LOCATION (b)	I.C.C. CLASS (c)	TRAIN NUMBER (d)	NUMBER OF CARS IN TRAIN (e)	SPEED (M.P.H.) (f)	CLASS OF PERSON INJURED (g)	ESTIMATED DISABILITY (DAYS) (h)	DETAILS AND CIRCUMSTANCES OF ACCIDENT (i)
	<u>1923</u>								
(1)	2-1	Cobre	S-j	1-22	9	Standing	Passenger brakeman	7	Running to catch train after closing switch, stepped on tie and foot slipped off.
(2)	7-18	Wells	S-j	2	12	Standing	Dining car waiter	12	Struck side against edge of table, removing bedding from diner.
(3)	10-10	Deeth	S-c	2-1	13	Standing	Passenger fireman	10	Both eyes slightly burned by hot grease from rod cup.
(4)	11-15	Battle Mountain	S-j	19	10	30-40	Chair car porter	6	Door struck side of head as it was being opened.
	<u>1924</u>								
(5)	2-6	Hazen	S-g	19	9	Unknown	Passenger	12	Bruised face; claims jumped through chair car window.
(6)	2-27	Ditho	S-g	22	8	45	Passenger	2	Attempted to jump through window of coach while mentally deranged.
(7)	3-11	Granite Point	D-d	9	10	45-50	Mail clerk Mail clerk	6 2	Derailed due to broken switch tie rod.
(8)	4-11	Lakey-Humboldt	S-j	19	9	40	Passenger brakeman	10	Caught thumb in door.
(9)	5-28	Fenelon	S-j	20	10	40	Passenger brakeman	8	Caught thumb in door.
(10)	8-5	Sparks	S-g	20	Detached from train	Standing	Passenger fireman	20	Jumped from engine, detached from train at time, to avoid injury by derailed freight train.
(11)	9-30	Moore	S-g	22	11	8-10	Freight brakeman	15	Dislocated shoulder boarding engine.
(12)	12-13	Hazen	S-j	19	9	10	Passenger	10	Fractured collar bone, falling from train.
(13)	12-23	Deeth	S-j	10	15	Standing	Passenger brakeman	7	Feet frozen while flagging due to extreme cold.
	<u>1925</u>								
(14)	2-5	Kiko-Wells	S-j	20	9	40-50	Passenger	45	Back bruised falling against lavatory.
(15)	10-5	Winnemucca	S-j	19	12	Standing	Dining car cook	10	Fall from ladder while cleaning ceiling of diner kitchen.
(16)	10-8	Sparks	S-j	20	12	Standing	Passenger		

	DATE (a)	LOCATION (b)	I.C.C. CLASS (c)	TRAIN NUMBER (d)	NUMBER OF CARS IN TRAIN (e)	SPEED (M.P.H.) (f)	CLASS OF PERSON INJURED (g)	ESTIMATED DISABILITY (DAYS) (h)	DETAILS AND CIRCUMSTANCES OF ACCIDENT (i)
	<u>1923</u>								
(1)	2-1	Cotre	S-j	1-22	9	Standing	Passenger brakeman	7	Running to catch train after closing switch, stepped on tie and foot slipped off.
(2)	7-18	Wells	S-j	2	12	Standing	Dining car waiter	12	Struck side against edge of table, removing bedding from diner.
(3)	10-10	Deeth	S-c	2-1	13	Standing	Passenger fireman	10	Both eyes slightly burned by hot grease from rod cup.
(4)	11-15	Battle Mountain	S-j	19	10	30-40	Chair car porter	6	Door struck side of head as it was being opened.
	<u>1924</u>								
(5)	2-8	Hazen	S-g	19	9	Unknown	Passenger	12	Bruised face; claims jumped through chair car window.
(6)	2-27	Ditho	S-g	22	8	45	Passenger	2	Attempted to jump through window of coach while mentally deranged.
(7)	3-11	Granite Point	D-d	9	10	45-50	Mail clerk Mail clerk	6 2	Derailement due to broken switch tie rod.
(8)	4-11	Imley-Humboldt	S-j	19	9	40	Passenger brakeman	10	Caught thumb in door.
(9)	5-28	Fenelon	S-j	20	10	40	Passenger brakeman	8	Caught thumb in door.
(10)	8-5	Sparks	S-g	20	Detached from train	Standing	Passenger fireman	20	Jumped from engine, detached from train at time, to avoid injury by derailed freight train.
(11)	9-30	Moor	S-g	22	11	8-10	Freight brakeman	15	Dislocated shoulder boarding engine.
(12)	12-15	Hazen	S-j	19	9	10	Passenger	10	Fractured collar bone, falling from train.
(13)	12-25	Deeth	S-j	10	15	Standing	Passenger brakeman	7	Feet frozen while flagging due to extreme cold.
	<u>1925</u>								
(14)	2-5	Elko-Wells	S-j	20	9	40-50	Passenger	45	Back bruised falling against lavatory.
(15)	10-5	Windemere	S-j	19	12	Standing	Dining car cook	10	Fall from ladder while cleaning ceiling of diner kitchen.
(16)	10-5	Sparks	C-b	23 2-272	5 55	20-35 Standing	Passenger engineer Passenger fireman	Killed Killed	Passenger train collided with standing freight train due to failure to observe open unattended switch.
	<u>1926</u>								
(17)	1-24	Deerwae	S-j	20	10	45	Dining car cook	14	Burned fingers with hot grease accident alleged jerk of train.
(18)	2-11	Sparks	S-j	6	6	Standing	Train baggageman	5	Bitten by dog in baggage car.
(19)	2-16	Patux	S-j	2	11	Standing	Dining car cook	12	Struck hand against top edge of coal box door.
(20)	11-26	Red House	S-j	20	13	Standing	Passenger	20	Bruised finger when lavatory door opened and knocked coach door shut.
	<u>1927</u>								
(21)	9-29	Greens	S-c	19	15	Standing	Passenger engineer	15	Wrenched back when slipped on pilot step of engine.
(22)	10-4	Golconda	S-j	20	14	20	Passenger	7	Alleged dislocation of shoulder due to rough step of train.

COMPARISON OF
NUMBER OF CASUALTIES AND CASUALTY RATES
ARIZONA AND NEVADA

		NUMBER OF CASUALTIES TO PERSONS														PASSENGER CASUALTIES PASSENGERS CARRIED BASIS PASSING MILE BASIS	
		PASSENGERS		EMPLOYEES ON DUTY								ALL OTHER NON-TRESPASSERS		TOTAL ALL PERSONS EXCEPT TRESPASSERS			
				TRAINMEN		ENGINEERS		OTHER EMPLOYEES		TOTAL EMPLOYEES							
				KILLED	INJURED	KILLED	INJURED	KILLED	INJURED	KILLED	INJURED						
				(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)						
(1) 6 YEARS 1923 - 1928	ARIZONA	1	36	1	11	1	12	-	24	1	47	-	5	2	88	13.01	4.84
	NEVADA	-	6	-	5	2	3	-	6	2	14	-	3	2	23	2.31	.95
	RATIO, ARIZONA RATES TO NEVADA RATES														5.63	5.06	
(2) 6 YEARS 1929 - 1934	ARIZONA	1	29	-	3	3	6	-	15	3	24	-	5	4	38	15.00	4.98
	NEVADA	-	9	1	2	-	-	-	1	1	3	-	3	1	15	5.65	2.07
	RATIO, ARIZONA RATES TO NEVADA RATES														2.65	2.41	
(3) 5 YEARS 1935 - 1939	ARIZONA	1	45	-	6	-	12	-	21	-	39	-	2	1	86	23.23	7.41
	NEVADA	9	24	-	2	-	3	13	12	13	17	1	4	23	45	22.31	6.71
	RATIO, ARIZONA RATES TO NEVADA RATES														1.04	1.10	
RATIO, NEVADA RATES TO ARIZONA RATES																	
(4) GRAND TOTAL 17 YEARS	ARIZONA	3	110	-	20	4	30	-	60	4	110	-	12	7	232	1.56	5.68
	NEVADA	9	39	1	9	2	6	13	19	16	34	1	10	26	83	8.46	3.08
	RATIO, ARIZONA RATES TO NEVADA RATES														1.96	1.84	
RATIO, NEVADA RATES TO ARIZONA RATES																	

(Sheet 2 of 10 sheets)

PASSENGER CASUALTY RATE			EMPLOYE CASUALTY RATE	OTHER NON- TRESPASSER RATE	CASUALTY RATE ALL PERSONS	
PASSENGERS CARRIED BASIS	PASSENGER MILE BASIS	PASSENGER TRAIN MILE BASIS	PASSENGER TRAIN MILE BASIS	PASSENGER TRAIN MILE BASIS	PASSENGER TRAIN MILE BASIS	
(o)	(p)	(q)	(r)	(s)	(t)	
13.01	4.84	3.50	4.54	.47	8.51	ARIZONA
2.31	.85	.64	1.71	.32	2.67	NEVADA
5.63	5.09	5.47	2.65	1.47	3.19	
15.00	4.98	3.13	2.81	.52	6.46	ARIZONA
5.65	2.07	1.18	.52	.39	2.09	NEVADA
2.65	2.41	2.65	5.40	1.35	5.09	
23.23	7.41	5.74	4.87	.25	10.86	ARIZONA
22.31	6.71	5.37	4.86	.81	11.06	NEVADA
1.04	1.10	1.07	1.008	3.24	1.02	
1.56	5.68	6.01	4.05	.43	3.48	ARIZONA
8.46	3.08	2.07	2.16	.47	4.71	NEVADA
1.98	1.84	1.94	1.88	1.06	1.80	

(Sheet 3 of 10 sheets)

DETAIL OF CASUALTIES TO ALL CLASSES OF PERSONS, EXCEPT TRESPASSERS
SUSTAINED IN TRAIN AND TRAIN SERVICE ACCIDENTS, WHILE ON, EMPLOYED ON, OR GETTING ON OR OFF PASSENGER TRAINS
REPORTABLE TO THE INTERSTATE COMMERCE COMMISSION

YEARS 1923 TO 1939, INCLUSIVE
SOUTHERN PACIFIC COMPANY LINES IN
STATE OF ARIZONA

	DATE	LOCATION	I.C.C. CLASS	TRAIN NUMBER	NUMBER OF CARS IN TRAIN	SPEED (M. P. H.)	CLASS OF PERSON INJURED	ESTIMATED DISABILITY (DAYS)	DETAILS AND CIRCUMSTANCES OF ACCIDENT
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
	<u>1923</u>								
(1)	3-11	Maricopa	S-g	3	10	5	Special officer	7	Turned ankle on rock getting off engine tender.
(2)	3-4	Avra	S-j	110	9	35	Express helper	30	Caught heel on fish rack in car, barrel falling on abdomen.
(3)	6-13	Vail-Tucson	S-j	101	10	Unknown	Passenger	14	Fell from upper berth to aisle floor of sleeping car.
(4)	8-30	Maricopa	S-j	2	10	2	Passenger	14	Elderly passenger (76 yrs.) thrown against seat as train recoupled after making pickup.
(5)	9-4	Sibyl	M-b	(110 (X3654W	12 66	40 2	Express messenger	21	Thrown to floor of baggage car account of train scraped by freight car of train on siding.
(6)	9-12	Mohawk	S-j	101	8	20	Pantryman	14	Feet slipped on wet floor, striking arm against bread can in diner.
(7)	9-16	Yuma	S-j	102	8	4	Train baggage man	9	Feet slipped on threshold of baggage car, causing a fall to the ground.
(8)	12-2	Gavot	S-g	110	11	18-20	Passenger	10	Jumped through toilet window of car of moving train.
(9)	12-16	Kim-Mohawk	S-j	109	13	20	Passenger	2	Lost balance and fell while standing on arm seat, attempting to take lunch basket from hat rack.
(10)	12-25	Estrella	S-j	102	9	20	Passenger	7	Fell while getting into upper berth.
	<u>1924</u>								
(11)	1-20	Yuma	S-j	2-3	8	Unknown	Passenger	30	Claimed two ribs broken allegedly by sudden stop of train while running at high speed.
(12)	2-6	Dome	S-g	2-1	11	5	Passenger	20	Jumped or fell from moving train
(13)	2-26	Tucson	S-j	102	11	Standing	Station baggage man	10	Boxes and iron bars fell on leg while working inside of baggage car.
(14)	3-1	Tucson	S-g	101	12	Standing	Special officer	30	Feet slipped and fell while attempting to get in horse car.
(15)	3-20	Yuma	S-j	2-4	9	Standing	Passenger	7	Finger caught in jamb of car door.
								2	Cut thumb when knife slipped cutting bread in diner.

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
	1923								
(1)	3-11	Maricopa	S-g	3	10	5	Special officer	7	Turned ankle on rock getting off engine tender.
(2)	3-4	Avra	S-j	110	9	35	Express helper	30	Caught heel on flab rack in car, barrel falling on abdomen.
(3)	6-13	Vail-Tucson	S-j	101	10	Unknown	Passenger	14	Fell from upper berth to aisle floor of sleeping car.
(4)	8-30	Maricopa	S-j	2	10	2	Passenger	14	Elderly passenger (76 yrs.) thrown against seat as train recoupled after making pickup.
(5)	9-4	Sibyl	M-b	(110 (X3654W	12 66	40 2	Express messenger	21	Thrown to floor of baggage car account of train scraped by freight car of train on siding.
(6)	9-12	Mohawk	S-j	101	8	30	Pantryman	14	Feet slipped on wet floor, striking arm against bread can in diner.
(7)	9-16	Yuma	S-j	102	8	4	Train baggageman	9	Feet slipped on threshold of baggage car, causing a fall to the ground.
(8)	12-2	Cavot	S-g	110	11	18-20	Passenger	10	Jumped through toilet window of car of moving train.
(9)	12-16	Kim-Mohawk	S-j	109	13	20	Passenger	2	Lost balance and fell while standing on arm seat, attempting to take lunch basket from hat rack.
(10)	12-23	Estrella	S-j	102	9	20	Passenger	7	Fell while getting into upper berth.
	1924								
(11)	1-20	Yuma	S-j	2-5	8	Unknown	Passenger	30	Claimed two ribs broken allegedly by sudden stop of train while running at high speed.
(12)	2-6	Dome	S-g	2-1	11	5	Passenger	20	Jumped or fell from moving train
(13)	2-26	Tucson	S-j	102	11	Standing	Station baggageman	10	Boxes and iron bars fell on leg while working inside of baggage car.
(14)	3-1	Tucson	S-g	101	12	Standing	Special officer	30	Feet slipped and fell while attempting to get in horse car.
(15)	3-20	Yuma	S-j	2-4	9	Standing	Passenger	7	Finger caught in jamb of car door.
(16)	3-21	Tucson	S-j	110	11	Standing	3rd cook	8	Cut thumb when knife slipped cutting bread in diner.
(17)	3-25	Yuma	S-j	3	10	Standing	Express messenger	3	Trunk fell on foot while unloading baggage and express.
(18)	3-29	Jaynes	S-j	1	11	40	Passenger	2	Broken glass from light globe entered eye.
(19)	5-29	Millito	S-j	110	8	25	Passenger	4	Car window dropped on thumb.
(20)	7-14	Enid	S-j	110	11	35	Passenger	10	Car window dropped on hand account defective catch.
(21)	9-24	Lima-Bon	D-b	102	10	45	Passenger fireman Passenger engineer Passenger conductor 5 passengers	Killed 4 14 3 to 14	Derailment caused by malicious tampering with track.
(22)	10-25	Yuma	S-j	109	13	Standing	Passenger	7	Attempting raise window, finger caught between windows.
(23)	10-25	Benson	S-j	110	10	Standing	3rd cook	14	Hot grease splashed from pan, burning hand.
(24)	12-4	Phoenix	S-g	1	8	10	Police officer	11	Stepped on stone getting off train.
(25)	12-5	Escala	S-j	102	12	35	Passenger engineer	5	Foreign particle in eye.

	DATE (a)	LOCATION (b)	I.C.C. CLASS (c)	TRAIN NUMBER (d)	NUMBER OF CARS IN TRAIN (e)	SPEED (M.P.H.) (f)	CLASS OF PERSON INJURED (g)	ESTIMATED DISABILITY (DAYS) (h)	DETAILS AND CIRCUMSTANCES OF ACCIDENT (i)
	<u>1925</u>								
(26)	1-21	Ligarta-Adonde	S-J	12	9	35	Passenger	3	Child passenger caught finger in door.
(27)	2-1	Phoenix	S-c	134	2	Standing	Passenger fireman	4	Face burned while relighting fire in firebox when gas ignited and flame flared out
(28)	3-19	Tucson	S-c	122	5	Standing	Passenger fireman	15	Arm and leg scalded when steam hose between engine and tender blew off.
(29)	3-17	Dome	S-J	101	9	40	2nd cook	15	Hot grease spilled on hand.
(30)	4-27	Tucson	S-g	109	7	2-3	Car repairer	4	Sprained ankle getting off moving train.
(31)	4-4	Cortaro	S-J	110	11	50	Passenger brakeman	4	Hot sand flew in eyes.
(32)	4-16	Bernardino	S-J	4	10	45	Passenger	3	Some other passenger stepped on toe.
(33)	5-27	Bowie	S-J	1-12	13	45	Passenger	7	Struck over right eye when curtain rod in Pullman berth fell.
(34)	5-27	Bisbee Jct.	S-J	4	12	30-40	Passenger	7	Elderly woman passenger fell in aisle of sleeping car.
(35)	9-26	Phoenix	S-J	34	3	Standing	Dining car waiter	7	Fell when foot slipped while standing on dresser.
(36)	11-20	Bisbee Jct.	S-J	1-8	2	20	Passenger	5	A mother closed lavatory door on child passenger's thumb.
(37)	12-8	Phoenix	S-J	32	11	Standing	Passenger	30	Slipped on banana peel on floor of car and fell.
(38)	12-14	Maricopa	S-J	1	12	Standing	3rd cook	14	Cut finger when slicing meat in kitchen of dining car.
(39)	12-29	Mohawk	S-J	109	13	10	Chair car porter	7	Groin bruised when trap door unexpectedly flew up while opening trap.
(40)	12-17	San Simon	S-J	12	12	40	Chef	9	Cut thumb when reaching for knife in rack.
	<u>1926</u>								
(41)	1-3	Tucson	S-J	1	14	Standing	3rd Cook	10	Hot grease from pan being handled splashed on hand.
(42)	1-10	Stockham	S-J	1	9	10	Passenger brakeman	12	Closed car door on thumb.
(43)	1-16	Wellton	S-J	2-101	11	Standing	4th cook	10	Punctured thumb on ragged edge of shelf on dresser.
(44)	2-12	Maricopa	S-J	2	9	3	Passenger	2	Thrown against mirror in lavatory in tourist sleeper when rough coupling made.
(45)	2-18	Drury	S-g	101	11	12	Passenger brakeman	10	Strained ligaments in leg getting off train.
(46)	2-16	Bowie	S-J		9	40	3rd cook	7	Severed end of little finger peeling potatoes.
(47)	3-29	Yuma	S-g	4	10	Standing	Passenger	10	Turned ankle getting off car.
(48)	3-30	Piedra							

(27)	2-1	Phoenix	S-c	134	4	Standing	Passenger fireman	15	Arm and leg scalded when steam hose between engine and tender blew off.
(28)	3-19	Tucson	S-c	122	5	Standing	Passenger fireman	15	Hot grease spilled on hand.
(29)	3-17	Dome	S-j	101	9	40	2nd cook	15	Sprained ankle getting off moving train.
(30)	4-27	Tucson	S-g	109	7	2-3	Car repairer	4	Hot sand flew in eyes.
(31)	4-4	Cortaro	S-j	110	11	50	Passenger brakeman	4	Some other passenger stepped on toe.
(32)	4-16	Bernardino	S-j	4	10	45	Passenger	5	Struck over right eye when curtain rod in Pullman berth fell.
(33)	5-27	Bowie	S-j	1-12	13	45	Passenger	7	Elderly woman passenger fell in aisle of sleeping car.
(34)	5-27	Bisbee Jct.	S-j	4	12	30-40	Passenger	7	Fell when foot slipped while standing on dresser.
(35)	9-26	Phoenix	S-j	34	3	Standing	Dining car waiter	7	A mother closed lavatory door on child passenger's thumb.
(36)	11-20	Bisbee Jct.	S-j	1-8	2	20	Passenger	5	Slipped on banana peel on floor of car and fell.
(37)	12-8	Phoenix	S-j	32	11	Standing	Passenger	30	Cut finger when slicing meat in kitchen of dining car.
(38)	12-14	Maricopa	S-j	1	12	Standing	3rd cook	14	Groin bruised when trap door unexpectedly flew up while opening trap.
(39)	12-29	Mohawk	S-j	109	13	10	Chair car porter	7	Cut thumb when reaching for knife in rack.
(40)	12-17	San Simon	S-j	12	12	40	Chef	9	
<u>1928</u>									
(41)	1-3	Tucson	S-j	1	14	Standing	3rd Cook	10	Hot grease from pan being handled splashed on hand.
(42)	1-10	Stockham	S-j	1	9	10	Passenger brakeman	12	Closed car door on thumb.
(43)	1-16	Wellton	S-j	2-101	11	Standing	4th cook	10	Punctured thumb on ragged edge of shelf on dresser.
(44)	2-12	Maricopa	S-j	2	9	3	Passenger	2	Thrown against mirror in lavatory in tourist sleeper when rough coupling made.
(45)	2-18	Drury	S-g	101	11	12	Passenger brakeman	10	Strained ligaments in leg getting off train.
(46)	2-16	Bowie	S-j	1	9	40	3rd cook	7	Severed end of little finger peeling potatoes.
(47)	3-29	Yuma	S-g	4	10	Standing	Passenger	10	Turned ankle getting off car.
(48)	3-30	Piedra	S-j	11	10	40	Dining car waiter	6	Slipped on slat floor in diner kitchen and fell.
(49)	3-12	Douglas	S-j	3	10	1	Passenger	3	Struck knee against seat as train started to move for short distance.
(50)	6-13	Aztec	S-c	103	9	50	Passenger fireman	5	Particle of hot carbon blew into eye.
(51)	8-17	Tucson	S-j	103	10	1-2	Car inspector	20	Thrown from top of diner in train to ground when unexpected movement of train was
(52)	9-12	Phoenix-Tucson	S-c	108	3	Unknown	Passenger fireman	12	Shoulder burned by continuous exposure of body to heat from fire box door while shoveling coal into fire box.
(53)	9-23	Whetstone	S-j	103	11	40	Passenger	15	Finger caught between dining car door and jamb.
(54)	10-27	Sacate	S-c	3	3	35	Passenger fireman	14	Fell against seat box when foot slipped on deck apron.
(55)	12-21	Red Rock	S-j	1	12	35	Dining car chef	13	Burned by hot grease spilled out of pan.

	DATE (a)	LOCATION (b)	I.C.C. CLASS (c)	TRAIN NUMBER (d)	NUMBER OF CARS IN TRAIN (e)	SPEED (M.P.H.) (f)	CLASS OF PERSON INJURED (g)	ESTIMATED DISABILITY (DAYS) (h)	DETAILS AND CIRCUMSTANCES OF ACCIDENT (i)
	<u>1927</u>								
(56)	1-31	Chandler	S-J	1	14	Standing	Pantryman	10	Cut finger slicing bread when knife slipped.
(57)	2-19	Phoenix	S-g	1	11	Standing	Passenger	14	Fell to platform while detraining account someone stepping on heel.
(58)	2-22	Maricopa	S-J	103	11	30	4th cook	7	Milk can dropped on foot.
(59)	3-20	Cortaro	C-a	103	12	40	Passenger fireman Passenger brakeman Passenger brakeman 4 passengers	30 30 7 3 to 7	Passenger train No. 103 collided with rear of Extra 2801 West on main track.
(60)	3-22	Tempe	S-J	101	10	25	Passenger conductor	60	Caught foot in berth-curtain and fell to floor of car.
(61)	3-4	Douglas	S-J	3	8	10	Pantryman-waiter	7	Cut thumb while slicing bread.
(62)	4-21	Benson	S-g	1	8	5	Passenger	7	Thrown to ground attempting to board moving train.
(63)	5-25	Rillito	S-g	104	14	4-6	Passenger brakeman	14	Turned ankle on ballast getting off moving train.
(64)	5-8	Tempe Jct.	S-J	108	7	Standing	Passenger brakeman	25	Stumbled over alag and fell while running ahead to throw switch.
(65)	7-13	Yuma	S-c	3	6	Standing	Passenger engineer	4	Fell on engine when foot slipped off end of sand box.
(66)	9-4	Litchfield	S-J	2	19	50	Passenger	30	Fell to floor of car getting out of upper berth when foot slipped off ladder.
	<u>1928</u>								
(67)	2-25	Tanque	D-d	152	3	35	Passenger	21	Fracture rib when train derailed due to a broken rail.
(68)	3-28	Yuma	S-J	102	10	Standing	Pullman porter	10	Closed car door on finger.
(69)	3-25	Empire	S-J	1	9	30	Express messenger	14	Hand cut by metal tag on wet box of express which slipped through hands.
(70)	6-13	Pembroke	S-c	104	12	15	Passenger engineer Passenger fireman	15 25	Burned by flare of flame out of fire box door account explosion of gasses in fire
(71)	6-9	Lewis Springs	S-J	103	11	30	Passenger brakeman	10	Passenger closed coach door on fingers which were resting between edge and sill vestibule door.
(72)	7-2	Cochise	S-c	1	8	2	Passenger fireman	15	Burned by fire kicking back out of fire box door.
(73)	7-7	Bowie	S-J	11	13	Standing	Passenger	10	Coach window dropped on hand.

(58)	2-22	Maricopa	S-J	103	11	30	4th cook	7	Fell to platform while detrainning account someone stepping on heel.
(59)	3-20	Cortaro	C-a	103	12	40	Passenger fireman Passenger brakeman Passenger brakeman 4 passengers	30 30 7 3 to 7	Milk can dropped on foot. Passenger train No. 103 collided with rear of Extra 2801 West on main track.
(60)	3-22	Tempe	S-J	101	10	25	Passenger conductor	30	Caught foot in berth-curtain and fell to floor of car.
(61)	3-4	Douglas	S-J	3	8	10	Pantryman-waiter	7	Cut thumb while slicing bread.
(62)	4-21	Benson	S-g	1	8	5	Passenger	7	Thrown to ground attempting to board moving train.
(63)	5-25	Rillito	S-g	104	14	4-6	Passenger brakeman	14	Turned ankle on ballast getting off moving train.
(64)	5-8	Tempe Jct.	S-J	108	7	Standing	Passenger brakeman	25	Stumbled over slag and fell while running ahead to throw switch.
(65)	7-13	Yuma	S-c	3	6	Standing	Passenger engineer	4	Fell on engine when foot slipped off end of sand box.
(66)	9-4	Litchfield	S-J	2	10	50	Passenger	30	Fell to floor of car getting out of upper berth when foot slipped off ladder.
1928									
(67)	2-25	Tanque	D-d	152	3	35	Passenger	21	Fracture rib when train derailed due to a broken rail.
(68)	3-28	Yuma	S-J	102	10	Standing	Pullman porter	10	Closed car door on finger.
(69)	3-25	Empire	S-J	1	9	30	Express messenger	14	Hand cut by metal tag on wet box of express which slipped through hands.
(70)	5-13	Pembroke	S-c	104	12	15	Passenger engineer Passenger fireman	15 25	Burned by flare of flame out of fire box door account explosion of gasses in fire box.
(71)	6-9	Lewis Springs	S-J	103	11	30	Passenger brakeman	10	Passenger closed coach door on fingers which were resting between edge and sill of vestibule door.
(72)	7-2	Cochise	S-c	1	8	2	Passenger fireman	15	Burned by fire kicking back out of fire box door.
(73)	7-7	Bowie	S-J	11	13	Standing	Passenger	10	Coach window dropped on hand.
(74)	8-19	Kofa	S-J	12	15	60	News agent	12	Finger cut when bottle of beverage broke.
(75)	9-8	Sentinel	S-J	104	12	Standing	Passenger brakeman	20	Backed into semaphore post while pulling baggage truck toward train.
(76)	10-31	Ligarta	S-g	2	14	55	Passenger	Killed	Handcuffed prisoner jumped through car window of moving train.
1929									
(77)	1-14	Araby	S-c	103	11	5	Passenger brakeman	30	Claims ruptured side throwing switch after train had pulled out of siding.
(78)	2-27	Maricopa	S-c	107	3	Standing	Passenger brakeman	10	Closing switch, hand slipped and finger got caught in slot under lever of switch stand.
(79)	2-8	Yuma	S-g	101	11	Standing	Passenger	30	Ankle fractured when feet slipped detrainning from sleeping car.
(80)	5-23	Tucson	S-g	1	11	1	4th cook	45	Sprained both ankles detrainning from moving train to obtain piece of ice.
(81)	6-27	Red Rock	S-J	104	14	30	Passenger fireman	8	Particle sand in eye.

	DATE (a)	LOCATION (b)	I.C.C. CLASS (c)	TRAIN NUMBER (d)	NUMBER OF CARS IN TRAIN (e)	SPEED (M.P.H.) (f)	CLASS OF PERSON INJURED (g)	ESTIMATED DISABILITY (DAYS) (h)	DETAILS AND CIRCUMSTANCES OF ACCIDENT (i)
	1929 (Contd)								
(82)	7-3	Casa Grande	S-J	103	11	25	2nd cook	6	Cut thumb when knife slipped while slicing meat.
(83)	8-26	Naco	S-J	4	13	45	2nd cook	6	Dropped pot of boiling water on leg and foot.
(84)	9-20	Cortaro	S-f	4	11	55	Passenger engineer	Killed	Struck by mail crane while looking out of gangway of engine alongside of train.
	1930								
(85)	1-18	Stockham	S-J	12	11	30	Pullman conductor	20	Stumbled over grip in aisle of car and fractured rib.
(86)	4-1	Tucson	S-J	103	14	1	Passenger	20	Claimed that jerk of train when stopping, threw him to car floor.
(87)	5-27	Buckeye	S-c	13	13	Standing	Passenger fireman	14	Fell into open manhole of engine tender.
(88)	5-11	Tucson	S-g	104	13	Standing	Passenger fireman	20	Turned ankle getting off engine when alighting on ground.
(89)	8-7	Mesa	S-J	103	11	50	4th cook	7	Claims fell in bed trap floor of diner.
(90)	8-7	Mesa	S-J	11	11	45	Passenger	4	Coach window dropped on hand.
(91)	8-23	Chandler	S-J	103	12	55	Waiter	7	Leg cut when lamp dropped from bracket.
(92)	9-15	Yuma	S-g	150	5	2	Passenger	2	Fell getting off moving train.
(93)	9-22	Yuma	S-g	11	14	Standing	Passenger	14	Slipped and fell to platform when detraining from coach.
(94)	9-26	Phoenix	S-g	104	14	Standing	Passenger	Unknown	Claims fell from sleeping car, step to platform account porter not providing stepping
(95)	9-27	Tucson	S-g	3	11	Standing	Passenger	7	Fell from sleeping car steps to station platform.
(96)	9-20	Gila	S-J	13	6	Unknown	Lunch car attendant	7	Cut on hand on broken dish.
(97)	10-29	Tucson	S-g	103	12	Standing	Passenger	14	Claims when alighting from train, made misstep and fell account step box not provided.
(98)	12-12	Tempe	S-g	107	2	Standing	Passenger	30	Slipped on steps and fell to platform.
(99)	12-10	Coolidge	S-J	102	11	30	Passenger	Unknown	Emergency stop by engineer due to mistaking signal, caused overnight bag to be thrown from head rest of berth on to passengers back.
	1931								
(100)	5-24	Tucson	S-g	108	2	Standing	Passenger	14	Slipped and fell when detraining.
(101)	5-23	Bowie							

(84)	9-20	Cortaro	S-f	4	11	55	Passenger engineer	Killed	Struck by mail crane while looking out of gangway of engine alongside of train.
	<u>1930</u>								
(85)	1-18	Stockham	S-J	12	11	30	Pullman conductor	20	Stumbled over grip in aisle of car and fractured rib.
(86)	4-1	Tucson	S-J	103	14	1	Passenger	20	Claimed that jerk of train when stopping, threw him to car floor.
(87)	5-27	Buckeye	S-c	13	13	Standing	Passenger fireman	14	Fell into open manhole of engine tender.
(88)	5-11	Tucson	S-g	104	13	Standing	Passenger fireman	20	Turned ankle getting off engine when alighting on ground.
(89)	8-7	Mesa	S-J	103	11	50	4th cook	7	Claims fell in bed trap floor of diner.
(90)	8-7	Mesa	S-J	11	11	45	Passenger	4	Coach window dropped on hand.
(91)	8-23	Chandler	S-J	103	12	55	Waiter	7	Leg cut when lamp dropped from bracket.
(92)	9-15	Yuma	S-g	150	5	2	Passenger	2	Fell getting off moving train.
(93)	9-22	Yuma	S-g	11	14	Standing	Passenger	14	Slipped and fell to platform when detraining from coach.
(94)	9-26	Phoenix	S-g	104	14	Standing	Passenger	Unknown	Claims fell from sleeping car step to platform account porter not providing stepping
(95)	9-27	Tucson	S-g	3	11	Standing	Passenger	7	Fell from sleeping car steps to station platform.
(96)	9-20	Gila	S-J	13	6	Unknown	Lunch car attendant	7	Cut on hand on broken dish.
(97)	10-29	Tucson	S-g	103	12	Standing	Passenger	14	Claims when alighting from train, made misstep and fell account step box not provided
(98)	12-12	Tempe	S-g	107	2	Standing	Passenger	30	Slipped on steps and fell to platform.
(99)	12-10	Coolidge	S-J	102	11	30	Passenger	Unknown	Emergency stop by engineer due to mistaking signal, caused overnight bag to be thrown from head rest of berth on to passengers back.
	<u>1931</u>								
(100)	5-24	Tucson	S-g	108	2	Standing	Passenger	14	Slipped and fell when detraining.
(101)	5-23	Bowie	S-J	11	14	Standing	Passenger	7	Child standing in car seat, fell forward and struck head against iron brace of chair
(102)	5-31	Drury	S-J	11	14	Standing	Passenger	7	Pulled baggage car door shut on finger.
(103)	6-16	Marsh	S-J	11	13	30	Passenger	2	Claims tripped on carpet in aisle of car and fell.
(104)	6-5	Dome	D-g	1-104	3	Unknown	Passenger engineer Passenger fireman 3 passengers	Killed Killed 3 to 7	Derailed caused by excessive speed in restricted curve territory
(105)	8-27	Red Rock	S-g	12	8	35	Passenger	11	Deranged passenger jumped through car window.
(106)	8-10	Cochise	S-J	104	11	30	Passenger	14	Lost balance and fell against window latch, while lowering window in chair car.
(107)	8-15	Kofa	S-J	11	12	55	Passenger	Killed	Fell from observation car of moving train.
(108)	9-1	Fairbana	S-J	103	14	30	Waiter	5	Finger lacerated by broken vinegar cruet.
(109)	10-20	Rillito	S-J	104	11	Standing	Waiter	7	Finger cut on ragged edge of cream can.
(110)	10-5	Hereford	S-J	4	11	45	Waiter	13	Finger cut when jar of fruit broke.
(111)	12-1	Phoenix	S-g	104	13	Standing	Passenger	3	Sprained ankle detraining from chair car.

	DATE	LOCATION	I.C.C. CLASS	TRAIN NUMBER	NUMBER OF CARS IN TRAIN	SPEED (M.P.H.)	CLASS OF PERSON INJURED	ESTIMATED DISABILITY (DAYS)	DETAILS AND CIRCUMSTANCES OF ACCIDENT
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
	<u>1932</u>								
(112)	1-7	Phoenix	S-J	36	2	1	Passenger	30	Stumbled or slipped and fell in aisle of smoking compartment.
(113)	1-16	Pantano	S-J	104	12	30	Passenger Engineer	90	Fell from gangway of engine of moving train.
(114)	1-29	Douglas	S-J	103	10	15	2nd cook	15	Right hand cut by knife allowed to remain on car dresser.
(115)	3-25	Mescal-Tucson	S-J	11	9	35	3rd cook	7	Thumb cut while cutting bread in diner kitchen.
(116)	7-1	Bowie	S-J	1	14	Unknown	3rd cook	10	Finger cut trimming ear of corn in diner kitchen.
(117)	10-25	Phoenix	S-g	12	11	Standing	Passenger	60	Passenger fell alighting from train when shoe heel caught on coach step.
(118)	10-3	Mobile	S-J	1	10	50	3rd cook	10	Thumb cut on broken light globe.
(119)	11-7	Luzena	S-J	1	11	40	2nd cook	14	Hand cut on knife when slicing peppers.
(120)	12-10	Yuma	S-J	3	14	Standing	Passenger fireman	90	Removing indicators from engine, fell off running board to ground.
(121)	12-20	Red Rock	S-J	1	12	50	Express messenger	5	Slipped on wet drain boards in baggage car.
	<u>1933</u>								
(122)	2-20	Benson	S-J	1	10	Standing	Express messenger	7	Cement cylinder dropped on foot.
(123)	3-29	Yuma	S-g	362	3	Standing	Passenger	3	Strained knee detraining from coach.
(124)	10-27	Yuma	S-J	11	8	30	Passenger	20	Coach window dropped on arm account latch improperly fastened.
	<u>1934</u>								
(125)	1-14	Phoenix	S-g	12	10	Standing	Passenger	14	Fell from coach steps to station platform while detraining.
(126)	1-27	Phoenix	S-g	4	13	Standing	Pullman porter	30	Turned and fractured ankle detraining from sleeping car.
(127)	2-20	Buckeye	S-g	11	9	Standing	Passenger	5	Sprained instep jumping from coach step to station platform.
(128)	2-15	Tucson	S-J	2	10	Standing	News agent	11	Sprained back picking up case of beer.
(129)	4-2	Phoenix	S-g	11	14	Standing	Passenger	60	Slipped and fell detraining from coach.
(130)	5-8	Bowie	S-g	1	13	Standing	Passenger	30	Fell and fractured ankle detraining from tourist car.

(115)	3-25	Mescal-Tucson	S-J	11	9	35	3rd cook	7	Thumb cut while cutting bread in diner kitchen.
(116)	7-1	Bowie	S-J	1	14	Unknown	3rd cook	10	Finger cut trimming ear of corn in diner kitchen.
(117)	10-25	Phoenix	S-g	12	11	Standing	Passenger	60	Passenger fell alighting from train when shoe heel caught on coach step.
(118)	10-1	Mobile	S-J	1	10	50	3rd cook	10	Thumb cut on broken light globe.
(119)	11-7	Luzena	S-J	1	11	40	2nd cook	14	Hand cut on knife when slicing peppers.
(120)	12-10	Yuma	S-J	3	14	Standing	Passenger fireman	90	Removing indicators from engine, fell off running board to ground.
(121)	12-20	Red Rock	S-J	1	12	50	Express messenger	5	Slipped on wet drain boards in baggage car.
<u>1933</u>									
(122)	2-20	Benson	S-J	1	10	Standing	Express messenger	7	Cement cylinder dropped on foot.
(123)	3-29	Yuma	S-g	362	3	Standing	Passenger	3	Strained knee detraining from coach.
(124)	10-27	Yuma	S-J	11	8	30	Passenger	20	Coach window dropped on arm account latch improperly fastened.
<u>1934</u>									
(125)	1-14	Phoenix	S-g	12	10	Standing	Passenger	14	Fell from coach steps to station platform while detraining.
(126)	1-27	Phoenix	S-g	4	13	Standing	Pullman porter	50	Armed and fractured ankle detraining from sleeping car.
(127)	2-20	Backeye	S-g	11	9	Standing	Passenger	5	Sprained instep jumping from coach step to station platform.
(128)	3-15	Tucson	S-J	2	10	Standing	News agent	11	Sprained back picking up case of bear.
(129)	4-2	Phoenix	S-g	11	14	Standing	Passenger	60	Slipped and fell detraining from coach.
(130)	5-8	Bowie	S-g	1	13	Standing	Passenger	30	Fell and fractured ankle detraining from tourist car.
(131)	5-22	Red Rock	S-g	1	14	2	Passenger brakeman	6	Trap door of sleeping car dropped on thumb.
(132)	5-28	Tucson	S-J	4	13	10	Express messenger	20	Finger caught between door handle and door frame.
(133)	10-25	Phoenix	S-J	11	10	15	Passenger	3	Fell against lavatory door when defective toilet seat slipped off.
(134)	12-3	Randolph	S-f	4	13	55	Passenger fireman	60	Head came in contact with mail crane.
<u>1935</u>									
(135)	1-1	Campo	S-J	4	14	50	Passenger	90	Elderly passenger (76 yrs) stumbled and fell in car aisle alleged due to jerk
(136)	1-14	Benson	S-J	2-1	14	1	Passenger	2	Alleged jerk or jar of train when starting, threw passenger to car floor.
(137)	1-24	Jaynes	S-J	11	10	Standing	Express messenger	25	Fell to ground when gang plank slipped while loading milk cans into express car
(138)	2-24	Mesa	S-J	3	13	10	Passenger	30	Two ribs broken when sudden stop and break-in-two of train occurred, due to engineer applying brakes in emergency when he observed water spout foul of

	DATE	LOCATION	I.C.C. CLASS	TRAIN NUMBER	NUMBER OF CARS IN TRAIN	SPEED (M.P.H.)	CLASS OF PERSON INJURED	ESTIMATED DISABILITY (DAYS)	DETAILS AND CIRCUMSTANCES OF ACCIDENT
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
	1935 (Contd)								
(139)	3-27	Crag	S-J	4	14	60	Chair car porter	10	Closed door against thumb.
(140)	4-4	Buckeye	S-c	11	9	Standing	Passenger fireman	5	Finger caught by valve wheel when taking water on engine.
(141)	4-5	Picacho	S-J	2	12	30	Passenger	14	Lavatory door closed on finger.
(142)	5-23	Papago	S-J	2-4	14	50	4th cook	20	Hot water being handled by another employe spilled on back.
(143)	6-4	Phoenix	S-g	3	14	Standing	Passenger	3	Slipped and fell getting off steps of chair car.
(144)	7-1	Apache-More	S-J	4	13	50	Passenger	45	Lost balance and fell to floor as was arising from chair in observation car.
(145)	8-17	Bowie	S-g	2	14	Standing	Passenger	7	Strained leg getting off coach or chair car.
(146)	8-8	Mobile	S-J	1	14	35	Passenger engineer	5	Particle of hot sand blew in eye.
(147)	8-31	Phoenix-Tucson	S-J	(Passgr. 127513)	7	Unknown	Passenger engineer	6	Sand blow into eye.
(148)	10-27	Tucson	S-g	3	13	Standing	Passenger	7	Fell detraining from Pullman sleeper.
(149)	11-11	Mesa	S-c	12	13	35	Passenger engineer	30	Claims while standing on deck of locomotive, lost balance and fell against sand box.
(150)	11-17	Empire	S-J	3	14	50	Passenger brakeman	7	Foreign object lodged in eye.
(151)	11-18	Chiricahua	S-J	12	12	50	Passenger	45	Aisle door of dining car closed on hand.
(152)	12-11	Solomon	S-g	361	2	30	Passenger	30	Deranged passenger jumped through car window.
	1936								
(153)	1-3	Bowie	S-J	1-1	10	15	Passenger conductor	6	Cinder blew into eye.
(154)	2-9	Tucson	S-g	4	13	15	Asst. Special Agent	4	Getting off moving train, struck leg against dwarf signal.
(155)	3-6	Stockham	S-J	2	14	40	Chef	21	Reaching for meat, struck knife in hand of another employe.
(156)	4-22	Fenner	S-J	2	14	35	Passenger	10	Clawed by a lion in baggage car.
(157)	5-10	Dixie	S-J	1-3	10	55	4th cook	8	Claims lurch of train caused hand to be thrust into dish of hot water.
(158)	6-22	Yuma	S-J	2-6	7	Standing	Passenger conductor	4	Sprained ankle - stepped on water hose nozzle on platform.
(159)	7-26	Buckeye	S-c	1-2	8	Standing	Passenger fireman	14	Scalded feet in hot water from injector.
(160)	7-15	Tucson	S-J	1-4	11	Standing	Car laborer	30	Dropped ice on foot while on car placing ice in bunker.

(143)	6-6	Phoenix	S-g	3	14	Standing	Passenger	3	Slipped and fell getting off steps of chair car.
(144)	7-1	Apache-More	S-j	4	13	50	Passenger	45	Lost balance and fell to floor as was arising from chair in observation car.
(145)	8-17	Bowie	S-g	2	14	Standing	Passenger	7	Strained leg getting off coach or chair car.
(146)	8-8	Mobile	S-j	1	14	35	Passenger engineer	5	Particle of hot sand blew in eye.
(147)	8-31	Phoenix-Tucson	S-j	(Passgr. 12751E)	7	Unknown	Passenger engineer	6	Sand blew into eye.
(148)	10-27	Tucson	S-g	3	13	Standing	Passenger	7	Fell detraining from Pullman sleeper.
(149)	11-11	Mesa	S-g	18	13	35	Passenger engineer	30	Claims while standing on deck of locomotive, lost balance and fell against
(150)	11-17	Empire	S-j	3	14	50	Passenger brakeman	7	Foreign object lodged in eye.
(151)	11-18	Chiricahua	S-j	12	12	50	Passenger	45	Aisle door of dining car closed on hand.
(152)	12-11	Solomon	S-g	381	2	30	Passenger	30	Deranged passenger jumped through car window.
1936									
(153)	1-3	Bowie	S-j	1-1	10	15	Passenger conductor	6	Cinder blew into eye.
(154)	2-9	Tucson	S-g	4	13	15	Ast. Special Agent	4	Getting off moving train, struck leg against dwarf signal.
(155)	3-6	Stockham	S-j	2	14	40	Chef	21	Reaching for meat, struck knife in hand of another employe.
(156)	4-22	Fenner	S-j	2	14	35	Passenger	10	Clawed by a lion in baggage car.
(157)	5-10	Dixie	S-j	1-3	10	55	4th cook	8	Claims lurch of train caused hand to be thrust into dish of hot water.
(158)	6-22	Yuma	S-j	2-6	7	Standing	Passenger conductor	4	Sprained ankle - stepped on water hose nozzle on platform.
(159)	7-26	Backeye	S-g	1-2	8	Standing	Passenger fireman	14	Scalded feet in hot water from injector.
(160)	7-15	Tucson	S-j	1-4	11	Standing	Car laborer	30	Dropped ice on foot while on car placing ice in bunker.
(161)	7-26	Douglas	S-j	1-4	12	Standing	Passenger	3	Closed coach door on hand.
(162)	8-17	Sabino	S-j	5	12	Unknown	Passenger	60	Passenger claimed jerk of train threw her off balance striking arm against
(163)	9-30	Dome-Yuma	S-j	1	10	Unknown	4th cook	5	Mixing bowl fell out of locker and struck nose.
(164)	10-12	Tucson	S-j	2	13	Unknown	Passenger	60	Fell over case which had become caught under car seat.
(165)	10-23	Serape	S-j	1	12	30	3rd cook	20	Arm scalded by hot water.
(166)	10-13	Fairbank	S-j	1-3	12	30	Passenger	Killed	Apparently fell or in some unknown manner detrained.
(167)	11-8	Mesa	S-g	2-11	14	Standing	Passenger	10	Shoved, while detraining and fell down car steps.
(168)	11-21	Tucson	S-g	2-4	10	Standing	Passenger	14	Claims slipped on lower car steps and step box in detraining and fell to pl
(169)	11-1	Douglas	S-g	1-4	12	Standing	Passenger	14	Lost balance and fell detraining from coach steps.
(170)	12-30	Phoenix	S-g	2-4	14	Standing	Passenger	10	Slipped and fell detraining.

	DATE	LOCATION	I.C.C. CLASS	TRAIN NUMBER	NUMBER OF CARS IN TRAIN	SPEED (M.P.H.)	CLASS OF PERSON INJURED	ESTIMATED DEBILITY (DAYS)	DETAILS AND CIRCUMSTANCES OF ACCIDENT
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
	1937								
(171)	1-12	Chandler	S-j	43	12	1	Passenger	7	Claims car door swung against her ankle.
(172)	2-12	Tucson	S-g	5	12	Standing	Passenger	12	Turned ankle detraining from sleeping car.
(173)	2-20	Jaynes	S-j	44	12	60	Passenger	30	Lost balance and fell getting out of upper berth in sleeping car.
(174)	2-1	Hereford	S-j	11	10	15	Passenger	30	Lost balance and fell in compartment of sleeping car.
(175)	3-23	Hereford	S-g	3	11	Standing	Passenger	30	Alleged foot turned stepping on step box to entrain on sleeping car.
(176)	3-18	Phoenix	S-j	43	14	Standing	Passenger fireman	30	Fell from running board of engine to ground.
(177)	3-25	Red Rock	S-j	43	11	30	3rd cook	11	Grease splashed on wrist while frying meat in diner kitchen.
(178)	4-11	Randolph	S-o	3	13	60	Passenger engineer Passenger fireman	30 19	Scalded and burned by hot water and steam when top pipe to water column in engine broke off.
(179)	4-29	Curvo	S-o	2	14	Standing	Passenger engineer	10	Wrist scalded by steam opening drain valve on feed-water pump.
(180)	4-11	Tempe	S-j	11	13	50	Passenger	3	Car door closed against fingers.
(181)	5-7	Tucson-Phoenix	S-j	43	12	Unknown	Chair car porter	8	Flying particle of sand blew in eye.
(182)	5-8	Yuma	S-j	1	11	Standing	3rd cook	15	Struck ankle against ragged edge of opened can.
(183)	5-12	Nescol	S-j	6	11	40	Passenger	20	Claims fell to floor in dressing room of sleeping car.
(184)	6-26	Phoenix-Wellton	S-j	43	14	Unknown	Passenger	11	Alleges tool bag fell from baggage rack and struck shoulder.
(185)	8-10	Litchfield	S-j	43	14	60	Passenger	7	Fell into open trap or well in diner vestibule.
(186)	8-12	Dixie	S-j	1	11	60	Passenger	14	Fell to floor of car getting down from upper berth.
(187)	8-12	Mesa	S-j	43	14	1	Passenger	3	Lost balance and fell to floor of car alleged rough start of train.
(188)	8-18	Tucson	S-j	44	14	1	Passenger	14	Claims train jerked when starting.
(189)	8-26	Jean	S-j	44	14	50	Chef	21	Scalded by hot water spilled by 3rd cook as train rounded curve.
(190)	9-23	Phoenix	S-g	44	12	Standing	Passenger	14	Claims when detraining, step box slipped or turned over.
(191)	9-1	Buckeye	S-j	44	14	5	Express messenger	14	Opening car door, caught hand between handle and door facing.
(192)	9-30	Pinal	S-j	381	8	25	Passenger	5	Caught thumb between car windows.
(193)	10-30	Phoenix	S-g	43	13	Standing	Passenger	14	Claims foot slipped off step box when detraining.

(172)	3-12	Tucson	S-g	5	12	Standing	Passenger	12	Turned ankle detraining from sleeping car.
(173)	2-20	Jaynes	S-j	44	12	60	Passenger	30	Lost balance and fell getting out of upper berth in sleeping car.
(174)	2-1	Hereford	S-j	11	10	15	Passenger	30	Lost balance and fell in compartment of sleeping car.
(175)	3-23	Hereford	S-g	3	11	Standing	Passenger	30	Alleged foot turned stepping on step box to entrain on sleeping car.
(176)	3-18	Phoenix	S-j	43	14	Standing	Passenger fireman	30	Fell from running board of engine to ground.
(177)	3-25	Red Rock	S-j	43	11	30	3rd cook	11	Grease splashed on wrist while frying meat in diner kitchen.
(178)	4-11	Randolph	S-c	3	13	60	Passenger engineer Passenger fireman	30 19	Scalded and burned by hot water and steam when top pipe to water column in engine broke off.
(179)	4-29	Curvo	S-c	2	14	Standing	Passenger engineer	10	Wrist scalded by steam opening drain valve on feed-water pump.
(180)	4-11	Tempe	S-j	11	13	30	Passenger	3	Car door closed against fingers.
(181)	5-7	Tucson-Phoenix	S-j	43	12	Unknown	Chair car porter	8	Flying particle of sand blew in eye.
(182)	5-8	Yuma	S-j	1	11	Standing	3rd cook	15	Struck ankle against ragged edge of opened can.
(183)	5-12	Mescal	S-j	6	11	40	Passenger	20	Claims fell to floor in dressing room of sleeping car.
(184)	6-26	Phoenix-Wellton	S-j	43	14	Unknown	Passenger	11	Alleges tool bag fell from baggage rack and struck shoulder.
(185)	8-10	Litchfield	S-j	43	14	60	Passenger	7	Fell into open trap or well in diner vestibule.
(186)	8-12	Dixie	S-j	1	11	60	Passenger	14	Fell to floor of car getting down from upper berth.
(187)	8-12	Mesa	S-j	43	14	1	Passenger	3	Lost balance and fell to floor of car alleged rough start of train.
(188)	8-18	Tucson	S-j	44	14	1	Passenger	14	Claims train jerked when starting.
(189)	8-26	Jean	S-j	44	14	30	Chef	21	Scalded by hot water spilled by 3rd cook as train rounded curve.
(190)	9-23	Phoenix	S-g	44	12	Standing	Passenger	14	Claims when detraining, step box slipped or turned over.
(191)	9-1	Buckeye	S-j	44	14	5	Express messenger	14	Opening car door, caught hand between handle and door facing.
(192)	9-30	Pinal	S-j	361	8	25	Passenger	5	Caught thumb between car windows.
(193)	10-30	Phoenix	S-g	43	13	Standing	Passenger	14	Claims foot slipped off step box when detraining.
(194)	10-2	Tempe	S-j	2-4	11	Standing	Passenger	14	Claims groin strained and ligaments torn when lifting car window.
(195)	10-23	Buckeye	S-j	1	11	Unknown	Passenger	14	Alleged jerk of train caused another passenger to step on her foot.
(196)	12-20	Ryder	S-j	44	14	60	Waiter	10	Porcelain top of power juice extractor cracked, cutting hand.
1938									
(197)	1-15	Charleston	S-j	12	11	45	Passenger brakeman	4	Foreign object lodged in left eye.
(198)	1-16	Douglas	S-j	44	13	10	Chef	12	Dislocated shoulder when lost balance reaching to prevent pan falling from shelf.
(199)	3-28	Ryder	S-c	3	13	20	Passenger fireman	20	Fell when foot slipped on grab iron on front end of engine tender.

	DATE	LOCATION	I.C.C. CLASS	TRAIN NUMBER	NUMBER OF CARS IN TRAIN	SPEED (M. P. H.)	CLASS OF PERSON INJURED	ESTIMATED DISABILITY (DAYS)	DETAILS OF CIRCUMSTANCES OF ACCIDENT
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
	1938 (Contd)								
(200)	4-23	Land	D-1	941	2	18	Freight brakeman	6	Thrown into corner of coach when car derailed.
(201)	4-11	Phoenix	S-h	44	12	6	Passenger	10	Rough stop caused by emergency stop of train due to striking delivery truck.
(202)	9-3	Tucson	S-g	3	13	Standing	Passenger	2	Slipped and fell to station platform detraining.
(203)	9-22	Yuma	S-g	1-2	13	Standing	Passenger	7	Made misstep on to stepping box, detraining from train.
(204)	9-17	Benson	S-j	2-43	13	30	Passenger brakeman	8	Foreign particle lodged in eye.
(205)	9-19	Tucson	S-j	2	12	Unknown	Passenger	3	Thumb caught between door and jamb.
(206)	10-2	Wellton	S-j	1	11	Unknown	Waiter	10	Claims particle of glass entered finger.
	1939								
(207)	1-30	Phoenix	S-g	2	14	Standing	Passenger	14	Slipped or stumbled and fell back against car steps when detraining.
(208)	2-14	Yuma	S-j	44	11	Unknown	Passenger	30	Elderly passenger (77) claims was thrown down by sudden stop of train in aisle sleeping car.
(209)	2-24	Tucson	S-j	43	12	Standing	Passenger fireman	180	Slipped when putting up indicators, and to avoid falling, jumped to ground.
(210)	2-24	Casa Grande	S-j	6	13	40	Waiter	20	Stumbled over broom handle in diner pantry.
(211)	3-7	Phoenix	S-g	44	10	Standing	Passenger	60	Turned ankle on car step when detraining.
(212)	6-3	Aztec	S-j	1	10	50	3rd cook	14	Cut finger on ragged edge of meat can.
(213)	6-11	Coolidge	S-j	44	13	Standing	Waiter	20	Cut finger on broken salt shaker.
(214)	7-29	Tucson	S-j	4	13	Standing	2nd cook	5	Arm strained when putting ice in fish box of diner.
(215)	9-15	Phoenix	S-j	43	11	30	Chair car porter	11	Fingers caught under vestibule apron.
(216)	9-23	Coolidge	S-j	2	14	Standing	Passenger fireman	21	Fell on engine tender when tank hook broke while pulling water spout around.
(217)	10-18	Yuma	S-g	363	4	Standing	Passenger	30	Slipped on car step and fell when boarding train.
(218)	10-14	Red Rock	S-j	5	14	50	Passenger	7	Fell to car floor when arising from table in diner.
(219)	10-17	Kim	S-j	1	12	50	Passenger	30	Claims lurch of train threw her down in dressing room of sleeping car.
(220)	12-2	Tucson	S-j	43	14	Standing	Baggage helper	21	Lost balance and fell backward while handling baggage in baggage car.

Defendant's Exhibit No. 293 (Witness J.J. Sullivan)
Feb. 6, 1941

HIGHWAY GRADE CROSSING ACCIDENTS IN WHICH AUTOMOBILES WERE INVOLVED
 ALL RAILROADS

STATE OF ARIZONA

REFLECTED BY STATISTICS OF THE INTERSTATE COMMERCE COMMISSION

AND
 THOSE WHICH OCCURRED ON LINES OF SOUTHERN PACIFIC COMPANY
 YEARS 1923 TO 1939, INCLUSIVE

YEAR (a)		NUMBER OF ACCIDENTS (b)	NUMBER OF CASUALTIES			NUMBER OF AUTOMOBILES REGISTERED (f)	CASUALTIES FOR STATE PER 10,000 AUTOMOBILES REGISTERED			CASUALTY RATE FOR ENTIRE UNITED STATES (j)
			KILLED (c)	INJURED (d)	TOTAL (e)		KILLED (g)	INJURED (h)	TOTAL (i)	
1923	All railroads S. P. only	8 1	2 -	22 1	24 1	49,175	.41	4.47	4.88	4.76
1924	All railroads S. P. only	9 1	5 -	21 5	26 5	57,628	.86	3.61	4.47	4.17
1925	All railroads S. P. only	12 9	5 5	15 12	20 17	68,029	.73	2.20	2.93	3.85
1926	All railroads S. P. only	11 6	4 3	12 6	16 9	73,682	.54	1.63	2.17	3.83
1927	All railroads S. P. only	22 14	9 7	27 16	36 23	81,047	1.11	3.33	4.44	3.47
1928	All railroads S. P. only	21 10	3 2	44 19	47 21	94,372	.32	4.66	4.98	3.42
1929	All railroads S. P. only	17 6	3 3	20 3	23 6	109,013	.28	1.83	2.11	3.18
1930	All railroads S. P. only	19 12	8 6	23 17	31 23	110,525	.72	2.08	2.80	2.60
1931	All railroads S. P. only	11 7	9 9	14 7	23 16	105,572	.85	1.33	2.18	2.29
1932	All railroads S. P. only	7 5	3 -	5 5	8 5	94,947	.32	.53	.85	3.11
1933	All railroads S. P. only	8 5	5 4	5 2	10 6	89,496	.56	.56	1.12	2.02
1934	All railroads S. P. only	6 1	2 -	8 1	10 1	96,586	.21	.83	1.04	2.17
1935	All railroads S. P. only	19 14	9 6	19 10	28 18	103,122	.87	1.84	2.71	2.24
1936	All railroads S. P. only	13 9	5 5	15 9	20 14	115,015	.43	1.30	1.73	2.19
1937	All railroads S. P. only	9 6	3 1	11 8	14 11	129,210	.23	.85	1.08	2.19

1924	All railroads S. P. only	9 1	5 -	21 5	26 5	57,828	.86	3.61	4.47	4.17
1925	All railroads S. P. only	12 9	5 5	15 12	20 17	68,029	.73	2.20	2.93	3.85
1926	All railroads S. P. only	11 6	4 3	12 6	16 9	73,682	.54	1.63	2.17	3.83
1927	All railroads S. P. only	22 14	9 7	27 16	36 23	81,047	1.11	3.33	4.44	3.47
1928	All railroads S. P. only	21 10	3 2	44 19	47 21	94,372	.32	4.66	4.98	3.42
1929	All railroads S. P. only	17 6	3 3	20 3	23 6	109,013	.28	1.83	2.11	3.18
1930	All railroads S. P. only	19 12	8 6	23 17	31 23	110,525	.72	2.08	2.80	2.60
1931	All railroads S. P. only	11 7	9 9	14 7	23 16	105,572	.85	1.33	2.18	2.29
1932	All railroads S. P. only	7 5	3 -	5 5	8 5	94,947	.32	.53	.85	2.11
1933	All railroads S. P. only	8 5	5 4	5 2	10 6	89,496	.56	.56	1.12	2.02
1934	All railroads S. P. only	6 1	2 -	8 1	10 1	96,586	.21	.83	1.04	2.17
1935	All railroads S. P. only	19 14	9 8	19 10	28 18	103,122	.87	1.84	2.71	2.24
1936	All railroads S. P. only	13 9	5 5	15 9	20 14	115,035	.43	1.30	1.73	2.19
1937	All railroads S. P. only	9 6	3 3	11 8	14 11	129,210	.23	.85	1.08	2.39
1938	All railroads S. P. only	16 10	6 4	19 13	25 17	128,791	.47	1.48	1.95	1.72
1939	All railroads S. P. only	12 7	1 -	22 13	23 13	131,355	.08	1.67	1.75	1.61

6 = Number of accidents not reported for year 1923.

SOURCE: Figures for all railroads, Interstate Commerce Commission Accident
Bulletins, Summary No. 24.

Southern Pacific Co. figures from Form T reports to Interstate
Commerce Commission.

5902

3122

Ex Defendant's Exhibit No. 294 (Witness J.J. Sullivan)
Feb. 6, 1941

DETAIL OF CASUALTIES TO ALL CLASSES OF PERSONS, EXCEPT TRESPASSERS
OPERATION OF PASSENGER TRAINS
SOUTHERN PACIFIC COMPANY
STATE OF ARIZONA
MARCH AND APRIL, 1940

LINE NO.	DATE (a)	LOCATION (b)	TRAIN NUMBER (c)	NO. OF CARS IN TRAIN (d)	SPEED (M.P.H.) (e)	CLASS OF PERSON INJURED (f)	ESTIMATED DISABILITY (DAYS) (g)	DETAIL AND CIRCUMSTANCES (h)
	1940							
1	Mar. 16	Dock-Phoenix	Nos. 5 & 43 (Consolidated)	26	Unknown	Passenger	7	Woman passenger alleged that while in sudden jerk and threw her backward, str leg. Trains Nos. 43 and 5 had been con Phoenix, account failure of engine on between engine and tender on account of st Olberg and Dock.
2	Mar. 16	Olberg-Dock	43	12	Unknown	Passenger	45	Woman passenger claims was thrown again coach when train made a sudden stop
3	Mar. 20	Tucson	44	14	2	Passenger	7	Woman passenger claims that while stand detrain, stepping box fell over on to r
4	Mar. 28	Phoenix	44	12	Standing	Passenger	14	Woman passenger slipped and fell on coa
5	Mar. 31	Phoenix	4	14	Standing	Passenger	14	Woman passenger slipped and fell detrai heel caught on car step.
6	Apr. 10	Mesa	44	9	8	Non-trespasser (Occupant of automobile)	60	Passenger automobile struck by train at
7	Apr. 24	Phoenix	44	12	Standing	Passenger	3	Male passenger slipped on wet floor of strike ankle against iron base of seat.

(n)

PASSERS

DETAIL AND CIRCUMSTANCES OF ACCIDENT

(h)

ger alleged that while in dressing room of coach, train gave and threw her backward, striking back of head against chair. Nos. 43 and 5 had been consolidated at Dock for movement to unt failure of engine on No. 43 due to broken oil line between and tender on account of striking boulder on track between dock.

ger claims was thrown against washbowl in dressing room of train made a sudden stop

ger claims that while standing in vestibule, getting ready to opening box fell over on to right great toe.

ger slipped and fell on coach steps when detraining.

ger slipped and fell detraining from Pullman sleeper when on car step.

omobile struck by train at street crossing.

er slipped on wet floor of coach causing him to fall and against iron base of seat.

Defendant's Exhibit No+ 295 (Witness J. Sullivan)
Feb. 6, 1941

DETAIL OF
TRAIN AND TRAIN SERVICE ACCIDENTS
ROAD FREIGHT TRAIN OPERATION
REPORTABLE TO THE INTERSTATE COMMERCE COMMISSION
SOUTHERN PACIFIC COMPANY IN
STATE OF ARIZONA

APRIL 1940

	DATE	LOCATION	I.C.C. CLASS	TRAIN NUMBER	NO. CARS IN TRAIN	SPEED M.P.H.	PERSON INJURED		ESTIMATED DISABILITY	DAMAGE TO EQUIPMENT	DETAILS
	(a)	(b)	(c)	(d)	(e)	(f)	NAME (g)	OCCUPATION (h)	(i)	(j)	
(1)	4-1	Tucson	S-h	903	65	10	Occupant of automobile		30		Passenger automobile ran into
(2)	4-4	Dixie	S-g	901	67	Standing	J.C.Slade	Brakeman	25		Turned and sprained ankle step
(3)	4-4	Benson	L-c	X-5028-W	68	5	None			\$500	Broken No. 2 axle on engine ac
(4)	4-11	Lancha	S-g	1-866	64	3standing	W.G.Old	Brakeman	5		Turned and sprained ankle on 1
(5)	4-12	Gila	S-g	X-3714-W	91	8	G.M.Barringer	Brakeman	60		Fell across rail when stepped tached from train and being ha
(6)	4-19	Heaton	M-b	3-854	65	30	None			\$225	Home automatic block signal da train.
(7)	4-30	Cavot	C-b	X-3652-W 3-864	None 58	Standing 10	None			\$425	Collision between light engine track without authority accoun

FREIGHT TRAIN AND FREIGHT TRAIN CAR MILES OPERATED STATE OF ARIZONA APRIL 1940			
	FREIGHT TRAIN MILES (1)	FREIGHT TRAIN CAR MILES (m)	AVERAGE CARS PER TRAIN (n)
TRAINS OF 70 CARS AND LESS	199,761	10,533,262	52.73
TRAINS OF OVER 70 CARS	37,257	3,180,278	85.36
TOTAL	237,018	13,713,540	57.85

207

DETAILS AND CIRCUMSTANCES OF ACCIDENT

(k)

ile ran into side of train

ed ankle stepping on piece of slag getting off car.

on engine account progressive fracture.

ed ankle on loose slag alighting from caboose.

when stepped on slag ballast alighting from caboose which was de-
and being handled alone by engine.

lock signal damaged evidently by timber projecting from car in

a light engine and freight train due to light engine occupying main
thority account enginemen overlooking superior train.

AVERAGE
CARS
ER TRAIN

(n)

52.73

85.36

57.85

5904

Defendant's Exhibit No. 296 (Witness E.C. Bruns)
Feb. 6, 1941

ATCHISON, TOPEKA AND SANTA FE RAILWAY COMPANY

CASUALTIES TO ROAD FREIGHT TRAINMEN AND ENGINEMEN ON DUTY WHILE ON OR GETTING ON OR OFF ROAD FREIGHT TRAINS
(Through, Local and Mixed)

Main Line Territory between Clovis, New Mexico, and Gallup, New Mexico, Compared with Main Line Territory between Gallup, New Mexico, and Needles, California, as Reported to the Interstate Commerce Commission - Years 1923 to 1939, Inclusive

Year	Freight Train Miles		Freight Car Miles		Casualties to Engineers				Casualties to Trainmen				Total Casualties				Total Casualties	Total Casualties	Clovis to Gallup
	Clovis to Gallup	Gallup to Needles	Clovis to Gallup	Gallup to Needles	Clovis to Gallup	Gallup to Needles	Clovis to Gallup	Gallup to Needles	Clovis to Gallup	Gallup to Needles	Clovis to Gallup	Gallup to Needles	Clovis to Gallup	Gallup to Needles	Clovis to Gallup	Gallup to Needles	Clovis to Gallup	Gallup to Needles	
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)	(t)
1923	1 175 346	1 960 891	76 115 151	88 156 075	0	4	0	2	1	7	0	10	1	11	0	12	12	12	
1924	1 140 306	1 698 814	75 556 360	84 653 953	0	4	0	2	0	8	0	17	0	12	0	19	12	19	
1925	1 195 872	1 634 851	81 264 647	89 079 648	0	2	0	1	0	1	0	27	0	3	0	28	3	28	
1926	1 171 228	1 628 608	82 968 327	88 392 993	0	1	0	3	1	3	0	10	1	4	0	13	5	13	
1927	1 290 853	1 801 731	94 394 619	99 414 342	2	1	0	1	3	6	0	18	5	7	0	19	12	19	
1928	1 231 455	1 716 215	91 988 648	97 722 751	0	1	0	0	1	13	0	15	1	14	0	15	15	15	
6 year period 1923-1928, inc.	7 205 060	10 440 910	502 287 752	547 419 755	2	13	0	9	6	38	0	97	8	51	0	106	59	105	
1929	1 309 064	1 793 971	95 155 812	102 365 961	0	0	0	1	0	8	2	7	0	8	2	8	8	10	
1930	1 099 683	1 529 121	80 877 423	88 858 774	0	1	0	1	0	9	0	13	0	10	0	14	10	14	
1931	893 347	1 331 527	67 212 573	78 107 725	0	1	0	3	0	9	0	10	0	10	0	13	10	13	
1932	804 039	1 223 178	61 344 551	71 689 489	0	0	0	1	0	1	0	8	0	1	0	9	1	9	
1933	801 770	1 178 002	59 277 107	68 972 780	0	3	0	0	0	2	0	11	0	5	0	11	5	11	
1934	906 205	1 497 165	65 635 580	75 580 016	0	0	0	5	0	0	0	4	0	0	0	9	0	9	
6 year period 1929-1934, inc.	5 814 108	8 552 964	429 473 046	485 574 745	0	5	0	11	0	29	2	53	0	34	2	64	34	66	
1935	1 074 834	1 668 739	75 052 697	88 121 066	0	1	0	1	0	2	1	5	0	3	1	6	3	7	
1936	1 286 976	1 778 901	85 966 636	98 992 578	0	1	0	2	0	6	0	11	0	7	0	13	7	13	
1937	1 380 033	1 845 289	92 268 686	103 456 758	0	2	0	1	1	1	0	12	1	3	0	13	4	13	
1938	1 187 564	1 656 791	84 957 728	94 295 398	0	2	0	0	1	0	0	5	1	2	0	5	3	5	
1939	1 251 246	1 754 961	89 761 348	98 712 427	0	2	0	1	0	7	1	7	0	9	1	8	9	9	
5 year period 1935-1939, inc.	6 180 253	8 704 681	427 957 095	483 878 227	0	8	0	5	2	16	2	40	2	24	2	45	26	47	
Total-17 years	19 199 421	27 698 555	1 359 717 893	1 516 872 727	2	26	0	25	8	83	4	190	10	109	4	215	119	219	
PERIOD 1935-1939 COMPARED WITH PERIOD 1923-1928																			IMPROVEMENT
PERIOD 1935-1939 COMPARED WITH PERIOD 1929-1934																			IMPROVEMENT

DETAIL OF FATALITIES

Clovis, New Mexico to Gallup, New Mexico			Gallup, New Mexico	
April 23, 1923 - Grants, N.M.	A brakeman murdered by hobos on 84-car train.		Jan. 7, 1929 - Holbrook, Ariz.	A brakeman on 61
Aug., 25, 1926 - Thoreau, N.M.	A conductor of a 70-car train killed when a cut of 14 outfit cars being shoved ahead of engine collided with hand car.		Sept. 30, 1929 - Seligman, Ariz.	A brakeman on 62
May 15, 1927 - Tolar, N.M.	A brakeman fell and run over while attempting to get on 12-car train after lining switch to enter siding.		June 20, 1935 - Williams, Ariz.	A conductor on 2 of lead car on
Sept. 23, 1927 - Mountainair, N.M.	An engineer and fireman of 99-car train moving 8 miles per hour killed by locomotive boiler explosion.		Sept. 30, 1939 - Joseph City, Ariz.	A brakeman on 67 top of 11th car
Oct. 18, 1927 - Tejon, N.M.	Conductor and brakeman in caboose of 59-car train standing on siding, killed when another train collided with rear end.			
Mar. 17, 1928 - Luman, N.M.	Brakeman on 10-car local freight fell and run over while cleaning car after unloading screenings.			

EIGHT TRAINS

p, New Mexico, and Needles, California

Total Casualties	Total Casualties	Freight Train Miles Per Casualty		Freight Car Miles Per Casualty		Average Cars Per Train		Year	
Clovis to Gallup (r)	Gallup to Needles (s)	Clovis to Gallup (t)	Gallup to Needles (u)	Clovis to Gallup (v)	Gallup to Needles (w)	Clovis to Gallup (x)	Gallup to Needles (y)		
12	12	97 946	163 408	6 342 929	7 346 340	64.8	45.0	1923	1
12	19	95 026	89 411	6 296 363	4 455 471	66.3	49.8	1924	2
3	28	398 624	58 388	27 088 215	3 181 416	68.0	54.5	1925	3
5	13	234 246	125 278	16 593 665	6 799 461	70.8	54.3	1926	4
12	19	107 571	94 828	7 866 218	5 232 334	73.1	55.2	1927	5
15	15	82 097	114 401	6 132 577	6 514 850	94.7	56.9	1928	6
59	106	122 120	98 499	8 513 352	5 164 337	69.7	52.4	6 year period 1923-1928, inc.	7
8	10	163 633	179 397	11 894 477	10 236 996	72.7	57.1	1929	8
10	14	109 968	109 223	8 087 742	6 347 055	73.5	58.1	1930	9
10	13	89 335	102 425	6 723 257	6 008 286	75.3	58.7	1931	10
1	9	304 039	135 908	61 344 551	7 965 498	76.3	58.6	1932	11
5	11	160 354	107 091	11 845 421	6 270 253	73.9	58.6	1933	12
0	9	-	166 352	-	8 397 780	72.4	50.5	1934	13
34	66	171 003	129 590	12 631 560	7 357 193	73.5	56.8	6 year period 1929-1934, inc.	14
3	7	358 278	238 391	25 000 899	12 588 724	69.8	52.8	1935	15
7	13	183 797	136 838	12 280 948	7 614 813	66.8	55.6	1936	16
4	13	145 008	141 945	23 067 172	7 958 212	66.9	56.1	1937	17
3	5	395 855	331 358	28 319 243	18 919 080	71.5	57.1	1938	18
9	9	139 027	194 996	9 973 483	10 968 047	71.7	56.2	1939	19
26	47	237 702	185 206	16 459 888	10 295 281	69.2	55.6	5 year period 1935-1939, inc.	20
119	219	161 340	126 477	11 426 201	6 926 359	70.8	54.8	Total-17 years	21
EMENT		94.65%	88.03%	93.34%	99.35%				22
EMENT		39.00%	42.92%	30.30%	39.93%				23

Gallup, New Mexico to Needles, California

- A brakeman on side ladder of car, 70-car train, struck head against water column and killed.
- A brakeman on 60-car train, walking over train, fell from train and run over.
- A conductor on log run handling 26 cars, shoving 16 and pulling 10 cars, fell from lead end of lead car and was run over.
- is. A brakeman on 67-car train fell or jumped from top of train. When last seen was seated on top of 11th car from engine. Body found outside of track. Had not been run over.

Main Line Territory between Clovis, New Mexico, and Gallup, New Mexico, Compared with Main Line Territory between Gallup, New Mexico, and Needles, Ca
as Reported to the Interstate Commerce Commission - Years 1923 to 1939, Inclusive

Year	Freight Train Miles		Freight Car Miles		Casualties to Enginemen				Casualties to Trainmen				Total Casualties				Total Casualties	Total Casualties	
	Clovis to Gallup	Gallup to Needles	Clovis to Gallup	Gallup to Needles	Clovis to Gallup		Gallup to Needles		Clovis to Gallup		Gallup to Needles		Clovis to Gallup		Gallup to Needles		Clovis to Gallup	Gallup to Needles	Clovis to Gallup
					Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured			
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)	(t)
1923	1 175 346	1 960 891	76 115 151	88 156 075	0	4	0	2	1	7	0	10	1	11	0	12	12	12	
1924	1 140 306	1 698 814	75 556 360	84 653 953	0	4	0	2	0	8	0	17	0	12	0	19	12	19	
1925	1 195 872	1 634 851	81 264 647	89 079 641	0	2	0	1	0	1	0	27	0	3	0	28	3	28	
1926	1 171 228	1 628 608	82 968 327	88 392 993	0	1	0	3	1	3	0	10	1	4	0	13	5	13	
1927	1 290 853	1 801 731	94 394 619	99 414 342	2	1	0	1	3	6	0	18	5	7	0	19	12	19	
1928	1 231 455	1 716 015	91 988 648	97 722 751	0	1	0	0	1	13	0	15	1	14	0	15	15	15	
6 year period 1923-1928, inc.	7 205 060	10 440 910	502 287 752	547 419 755	2	13	0	9	6	38	0	97	8	51	0	106	59	106	
1929	1 309 064	1 793 971	95 155 812	102 365 961	0	0	0	1	0	8	2	7	0	8	2	8	8	10	
1930	1 099 683	1 529 121	80 877 423	88 858 774	0	1	0	1	0	9	0	13	0	10	0	14	10	14	
1931	893 347	1 331 527	67 232 573	78 107 725	0	1	0	3	0	9	0	10	0	10	0	13	10	13	
1932	804 039	1 223 178	61 344 551	71 689 489	0	0	0	1	0	1	0	8	0	1	0	9	1	9	
1933	801 770	1 178 002	59 227 107	68 972 780	0	3	0	0	0	2	0	11	0	5	0	11	5	11	
1934	906 205	1 497 165	65 635 580	75 580 016	0	0	0	5	0	0	0	4	0	0	0	9	0	9	
6 year period 1929-1934, inc.	5 814 108	8 552 964	429 473 046	485 574 745	0	5	0	11	0	29	2	53	0	34	2	64	34	66	
1935	1 074 834	1 668 739	75 002 697	88 121 066	0	1	0	1	0	2	1	5	0	3	1	6	3	7	
1936	1 286 576	1 778 901	85 966 636	98 992 578	0	1	0	2	0	6	0	11	0	7	0	13	7	13	
1937	1 380 033	1 845 289	92 268 686	103 456 758	0	2	0	1	1	1	0	12	1	3	0	13	4	13	
1938	1 187 564	1 656 791	84 957 728	94 595 398	0	2	0	0	1	0	0	5	1	2	0	5	3	5	
1939	1 251 246	1 754 961	89 761 348	98 712 427	0	2	0	1	0	7	1	7	0	9	1	8	9	9	
5 year period 1935-1939, inc.	6 180 253	8 704 681	427 957 095	483 878 227	0	8	0	5	2	16	2	40	2	24	2	45	26	47	
Total-17 years	19 199 421	27 698 555	1 359 717 893	1 516 872 727	2	26	0	25	8	83	4	190	10	109	4	215	119	219	
PERIOD 1935-1939 COMPARED WITH PERIOD 1923-1928																	IMPROVEMENT		
PERIOD 1935-1939 COMPARED WITH PERIOD 1929-1934																	IMPROVEMENT		

DETAIL OF FATALITIES

Clovis, New Mexico to Gallup, New Mexico										Gallup, New Mexico to Needles, California									
April 23, 1923 - Grants, N.M.	A brakeman murdered by hobos on 84-car train.									Jan. 7, 1929 - Holbrook, Ariz.	A brakeman on side of lead car and								
Aug. 25, 1926 - Thoreau, N.M.	A conductor of a 70-car train killed when a cut of 14 outfit cars being shoved ahead of engine collided with hand car.									Sept. 30, 1929 - Seligman, Ariz.	A brakeman on 60-car train								
Nov. 15, 1927 - Tolar, N.M.	A brakeman fell and run over while attempting to get on 12-car train after lining switch to enter siding.									June 20, 1935 - Williams, Ariz.	A conductor on 10-car train								
Sept. 23, 1927 - Mountainair, N.M.	An engineer and fireman of 99-car train moving 8 miles per hour killed by locomotive boiler explosion.									Sept. 30, 1939 - Joseph City, Ariz.	A brakeman on 67-car train								
Oct. 18, 1927 - Tejon, N.M.	Conductor and brakeman in caboose of 59-car train standing on siding, killed when another train collided with rear end.																		
May 17, 1928 - Largo, N.M.	Brakeman on 10-car local freight, fell and run over while cleaning car after unloading screenings.																		
May 16, 1937 - Rio Puerco, N.M.	Brakeman riding on top of 1st car back of engine of 68-car train which struck a bull on a bridge; engine remained on track but 35 head cars were derailed, killing brakeman.																		
March 23, 1938 - Wingate, N.M.	Brakeman on 17-car train walking over train toward head end, fell from train and was run over.																		

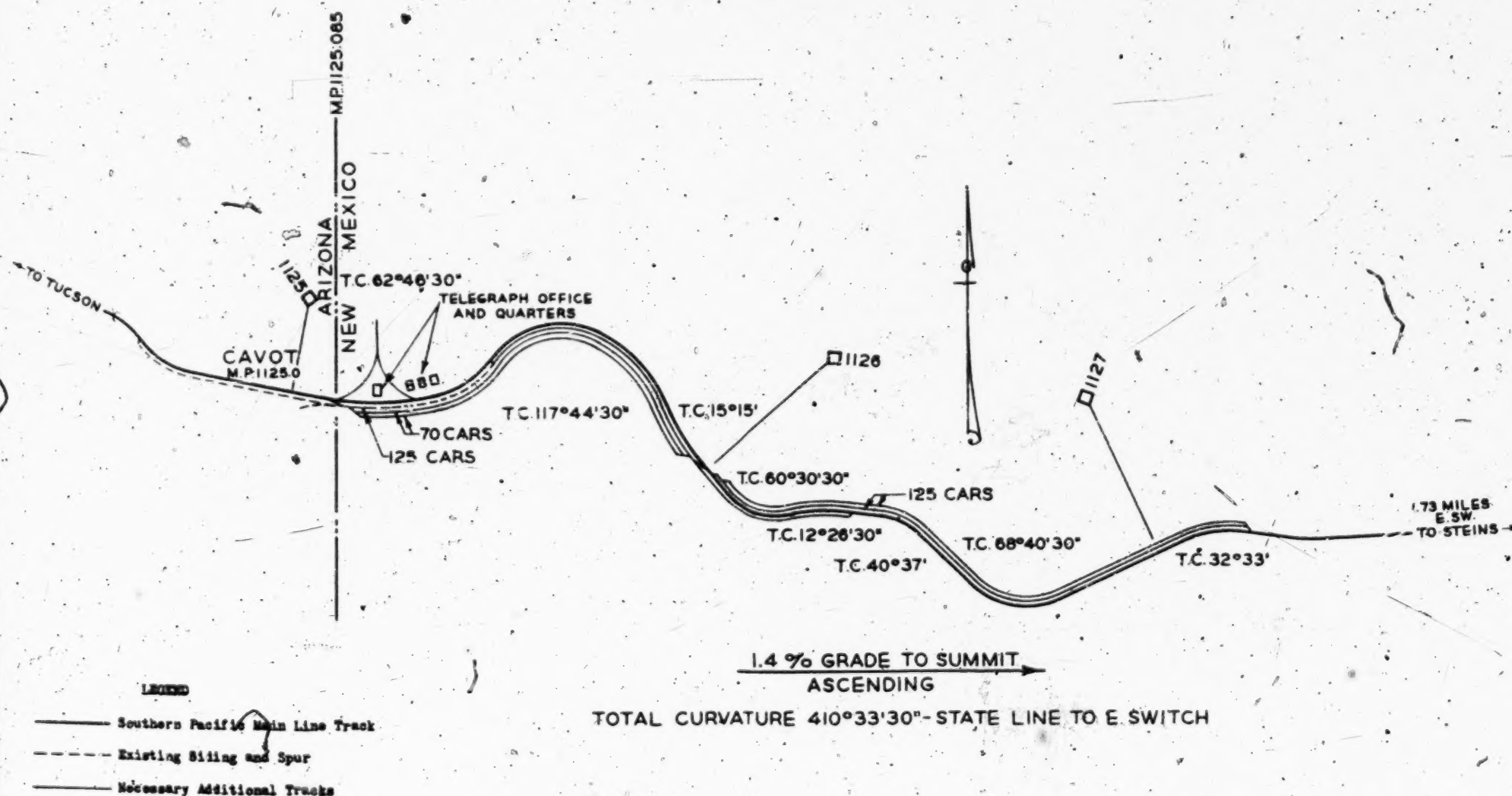
MAIN LINE MILEAGE

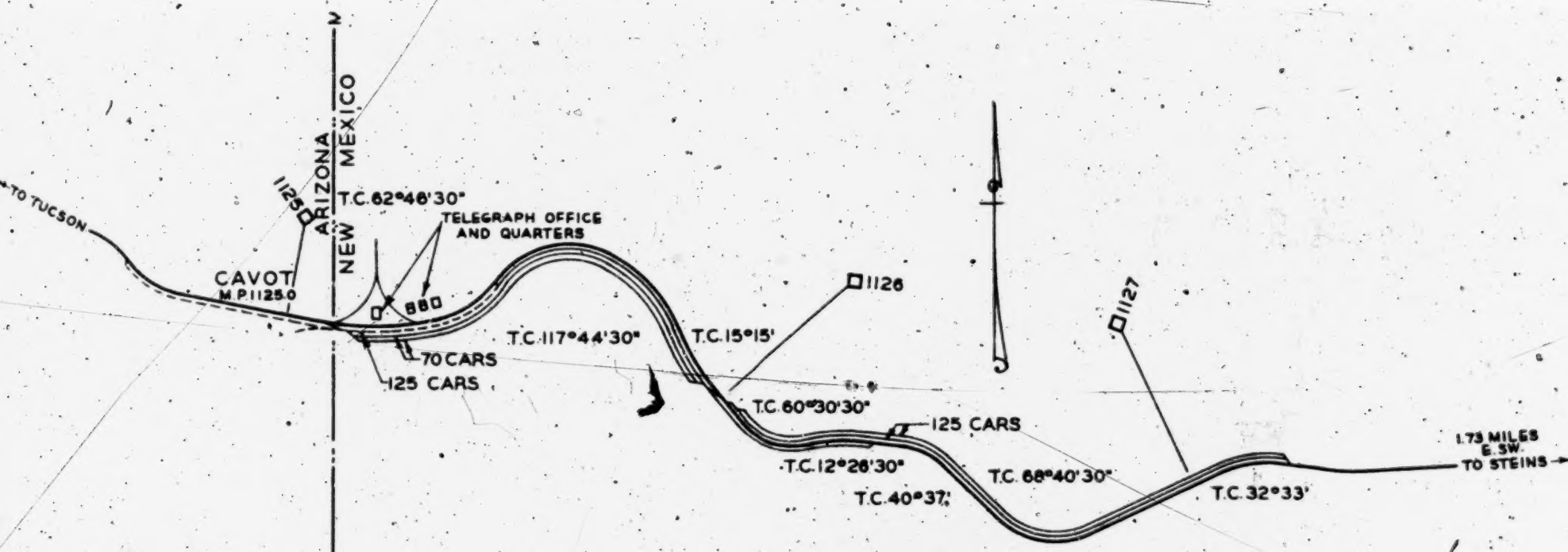
Clovis, New Mexico to Gallup, New Mexico - 383.9 miles
Gallup, New Mexico to Needles, California - 419.7 miles (includes 385.7 miles in Arizona)
Gallup, New Mexico to New Mexico-Arizona State Line - 22 miles
Needles, California to Arizona-California State Line - 12 miles

Defendant's Exhibit No. 297 (Witness Sines)
Feb. 7, 1941

SOUTHERN PACIFIC COMPANY
(Pacific Lines)

ESTIMATED COST OF A TERMINAL AT THE ARIZONA-NEW MEXICO STATE LINE
FOR THE RECONSISTING OF FREIGHT TRAINS





1.4 % GRADE TO SUMMIT
ASCENDING

TOTAL CURVATURE 410°33'30\"-STATE LINE TO E SWITCH

LEGEND

- Southern Pacific Main Line Track
- - - - Existing Siding and Spur
- Necessary Additional Tracks

(1) Track cost, includes the following.			
25,889 track feet of new siding,			
2,600 track feet of new wye tracks,			
Relocate 1 main line switch,			
Install 9 S. H. 90 lb. siding switches,			
Install 6 new 112 lb. main line switches,			
Install 4 new derricks.			
TOTAL TRACK COST,			\$ 78,193
(2) Grading: 29,150 cu. yds. rock cut @ \$0.75			\$21,863
135,430 cu. yds. dirt fill @ \$0.20			27,063
			48,946
(3) Extend 16 concrete culverts			14,400
(4) Relocate automatic block signals.			15,080
(includes dispatcher's phone and other apparatus in telegraph office)			
(5) Purchase land for wye track including legal expenses,			150
(6) Relocate 42 Western Union poles and raise 4 Western Union Poles			2,000
(7) Build telegraph office 16 ft x 20 ft. @ \$2,300			9,800
and 3 frame dwellings @ \$2,500,			
(8) Wall and water tower for domestic water supply,			1,000
			169,509
(9) Contingencies, (10%).			16,951
(10) TOTAL			\$186,460

Defendant's Exhibit No. 298 (Witness Sines)
Feb. 7, 1941

SOUTHERN PACIFIC COMPANY
(Pacific Lines)

YUMA, ARIZONA TO EL PASO, TEXAS VIA GILA AND LORDSBURG,
ESTIMATED NUMBER OF MEETS AND PASSES
ELIMINATED BY LONG TRAIN OPERATION JUNE AND AUGUST, 1938;
EXPANDED TO ANNUAL BASIS

DATE	ACTUAL				REDISPATCHED			
	TRAINS			NUMBER OF MEETS AND PASSES	TRAINS			NUMBER OF MEETS AND PASSES
	FREIGHT	PASSENGER	TOTAL		FREIGHT	PASSENGER	TOTAL	
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
JUNE 1938								
1	42	12	54	93	29	12	41	56
2	44	12	56	101	30	12	42	59
3	55	12	67	141	33	12	45	67
4	53	15	68	145	35	15	50	81
5	56	15	71	156	40	15	55	97
6	60	12	72	160	43	12	55	97
7	53	10	63	126	38	10	48	76
8	61	14	75	174	42	14	56	101
9	71	12	83	211	52	12	64	129
10	73	16	89	244	52	16	68	145
11	71	14	85	221	49	12	61	118
12	73	13	86	226	47	12	59	110
13	60	12	72	160	42	12	54	93
14	64	12	76	179	45	12	57	104
15	66	12	78	187	45	12	57	104
16	68	12	80	196	47	12	59	110
17	73	12	85	221	49	12	61	118
18	75	14	89	244	53	14	67	141
19	71	12	83	211	45	12	57	104
20	70	12	82	206	48	12	60	114
21	62	12	74	169	41	12	53	90
22	60	13	73	165	40	12	52	87
23	56	13	69	148	40	12	52	87
24	55	12	67	141	37	12	49	79
25	61	15	76	179	43	16	59	110

26	64	16	80	196	48	16	64	129
27	66	12	78	187	42	12	54	93
28	56	12	68	145	37	12	49	79
29	62	12	74	169	43	12	55	97
30	60	16	76	179	47	16	63	126
AUG. 1938								
1	32	12	44	64	29	12	41	56
2	30	13	43	61	24	13	37	46
3	35	15	50	81	26	15	41	56
4	37	12	49	79	29	12	41	56
5	39	12	51	84	29	12	41	56
6	46	12	58	107	34	12	46	70
7	42	12	54	93	30	12	42	59
8	39	12	51	84	34	12	46	70
9	34	12	46	70	24	12	36	43
10	31	12	43	61	24	12	36	43
11	37	12	49	79	30	12	42	59
12	34	12	46	70	28	12	40	53
13	39	12	51	84	27	12	39	50
14	38	12	50	81	29	12	41	56
15	31	12	43	61	25	12	37	46
16	33	14	47	73	23	13	36	43
17	26	15	41	56	24	15	39	50
18	34	12	46	70	26	12	38	48
19	39	15	54	93	31	15	46	70
20	38	11	49	79	32	11	43	61
21	40	13	53	90	32	13	45	67
22	36	13	49	79	31	13	44	64
23	34	12	46	70	28	12	40	53
24	32	12	44	64	24	12	36	43
25	38	12	50	81	27	12	39	50
26	41	12	53	90	31	12	43	61
27	38	13	51	84	30	12	42	59
28	36	15	51	84	25	12	37	46
29	35	12	47	73	29	12	41	56
30	27	12	39	50	20	12	32	34
31	27	12	39	50	25	12	37	46

TOTAL 2,959 777 3,736 7,625 2,142 768 2,910 4,671

trains and passes eliminated by Redispatch Study, June and August, 1938 2,954

trains and passes eliminated for year by long train operation

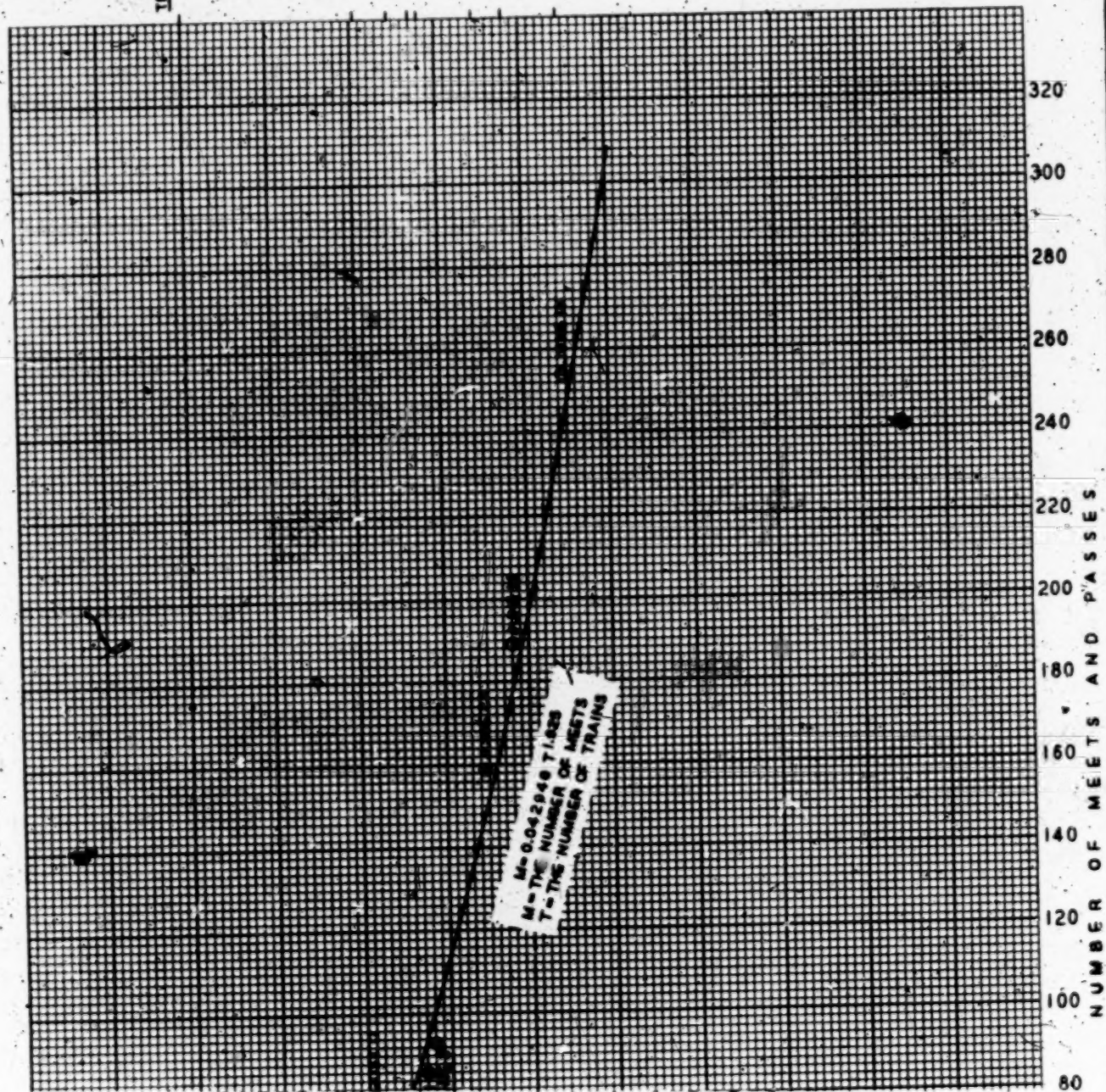
2,954 expanded in ratio of 17.89% to 100.00

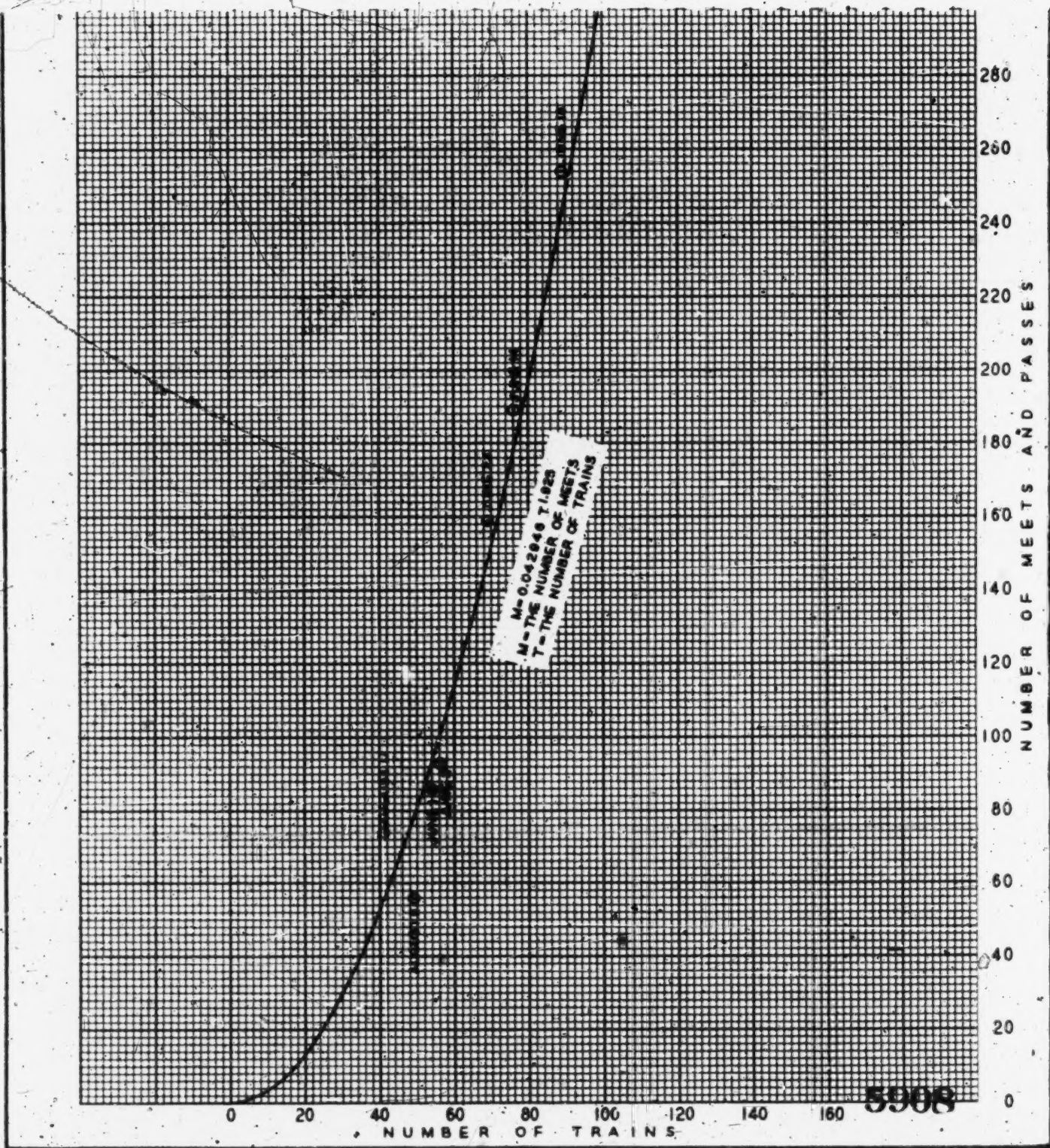
16,512

SOUTHERN PACIFIC COMPANY
PACIFIC LINES
**RELATION BETWEEN NUMBER OF TRAINS
AND
NUMBER OF MEETS AND PASSES**
YUMA, ARIZONA - EL PASO, TEXAS VIA GILA, TUCSON AND LORDSBURG
BASED ON OBSERVATIONS DURING JUNE AND AUGUST 1938

MEETS
AND
PASSES
0
TRAINS

74	56	159	254
41	49	69	89
54	54	76	
50	50		





5908

Defendant's Exhibit No. 299 (Witness Sines)
Feb. 7, 1941

SOUTHERN PACIFIC COMPANY
(Pacific Lines)

REDISPATCH STUDY - JUNE AND AUGUST, 1938
EXTRA-TERRITORIAL EFFECT
OF ARIZONA TRAIN LIMIT LAW
BETWEEN ARIZONA-NEW MEXICO STATE LINE AND EL PASO, TEXAS

LINE NO.	DISTRICT	ACTUAL TRAIN MILES (a)	REDISPATCHED TRAIN MILES (b)	TRAIN MILE SAVING (a) minus (b) (c)	PER CENT SAVING (c) divided by (a) (d)
1	Arizona-New Mexico State Line to Lordsburg, New Mexico, 23 miles 749 actual trains 519 redispached trains For period June and August, 1938	17,227	11,937	5,290	30.7%
2	Lordsburg, New Mexico to El Paso, Texas, 149 miles For period June and August, 1938	100,152	78,287	21,865	21.8%
3	Total for period (Lines 1 and 2)	117,379	90,224	27,155	23.1%
4	Train mile saving for year (saving for period increase in ratio of 17.89% to 100.00%)			151,769	
5	Monetary saving for year, (Line 4 x \$0.4988*)			\$ 75,712	

* - Exhibit No. _____ shows annual saving \$318,510 Yuma, Arizona to El Paso, Texas, (freight only), and 638,539 train miles eliminated equals \$0.4988 per train mile saved.

(1) Track cost, includes the following.
25,889 track feet of new siding.

Defendant's Exhibit No. 305 (Witness J.J. Sullivan)

Southern Pacific Company
(Pacific Lines)

MAIN TRACK MILEAGE
(As of December 31st)

YEAR	ARIZONA			NEW MEXICO		
	MAIN LINE	BRANCH	TOTAL	MAIN LINE	BRANCH	TOTAL
1923	399.95	144.93	544.88	549.74	303.47	853.21
1924	574.81	647.98	1222.79	731.45	303.47	1034.92
1925	576.44	658.92	1235.36	731.45	295.58	1027.03
1926	808.53	575.13	1383.66	731.45	295.58	1027.03
1927	808.27	575.08	1383.35	731.45	295.58	1027.03
1928	808.32	573.21	1381.53	731.45	295.58	1027.03
1929	808.29	572.93	1381.22	816.48	228.31	1044.79
1930	808.29	572.97	1381.26	816.48	228.31	1044.79
1931	808.29	579.94	1388.23	816.48	228.31	1044.79
1932	808.29	579.94	1388.23	816.46	222.80	1039.26
1933	808.29	486.02	1294.31	816.46	222.80	1039.26
1934	808.29	469.94	1278.23	816.37	196.53	1012.90
1935	808.29	457.89	1266.18	816.38	196.53	1012.91
1936	808.29	467.89	1276.18	816.38	196.53	1012.91
1937	808.29	467.82	1276.11	819.82	196.53	1016.35
1938	808.29	467.82	1276.11	819.82	153.60	973.42
1939	808.29	464.96	1273.25	819.82	153.60	973.42

Defendant's Exhibit No. 313 (Witness B.S. Sines)

Apr. 9, 1941

CLASSES AND NUMBER OF EMPLOYEES, TUCSON DIVISION
YEARS 1930 TO 1940, INCLUSIVE
(TRANSPORTATION DIVISION ONLY)

(Data abstracted from "I.C.C. Wage Statistics", Forms A and B, "Monthly Report of Employees, Service, and Compensation",
Number of employees who received pay during month - averaged to annual basis.)

LINE NO. (a)	DIVISION NUMBER (b)	REPORTING DIVISION (c)	1930 (d)	1931 (e)	1932 (f)	1933 (g)	1934 (h)	1935 (i)	1936 (j)	1937 (k)	1938 (l)	1939 (m)
1	111	Road Passenger Conductors	20	19	16	13	14	15	19	19	17	16
2	113	Road Freight Conductors (through freight)	31	37	32	38	44	53	57	65	55	59
3	114	Road Freight Conductors (local and way freight)	13	11	7	4	3	6	7	9	7	8
4	115	Road Passenger Baggage-men	-	-	-	-	-	-	-	-	3	3
5	116	Road Passenger Brakemen and Flagmen	35	31	27	30	31	31	34	38	33	29
6	117	Road Freight Brakemen and Flagmen (through freight)	91	111	97	166	184	197	220	239	210	240
7	118	Road Freight Brakemen and Flagmen (local and way freight)	34	30	18	14	13	20	26	32	25	25
8	119	Yard Conductors and Yard Foremen	19	16	13	12	12	17	19	24	18	21
9	120	Yard Brakemen and Yard Helpers	59	48	40	58	64	74	81	95	89	95
10	121	Road Passenger Engineers and Motormen	26	28	23	19	20	21	27	29	27	25
11	122	Road Freight Engineers and Motormen (through freight)	41	50	41	56	65	77	83	94	79	89
12	123	Road Freight Engineers and Motormen (local and way freight)	14	11	7	4	4	6	9	12	8	8
13	124	Yard Engineers and Motormen	22	17	13	16	15	18	22	26	22	25
14	125	Road Passenger Firemen and Helpers	23	22	19	20	19	20	26	25	23	22
15	126	Road Freight Firemen and Helpers (through freight)	41	50	42	72	85	97	97	114	98	111
16	127	Road Freight Firemen and Helpers (local and way freight)	14	11	7	6	6	9	10	13	8	9
17	128	Yard Firemen and Helpers	20	16	12	19	21	26	24	28	22	24
18	907	TOTAL (Transportation - Train and Engine)	503	508	414	547	600	687	761	862	744	809

NO. (a)	DIVISION NUMBER (b)	REPORTING DIVISION (c)	1930 (d)	1931 (e)	1932 (f)	1933 (g)	1934 (h)	1935 (i)	1936 (j)	1937 (k)	1938 (l)	1939 (m)
1	111	Road Passenger Conductors	20	19	16	13	14	15	19	19	17	1
2	113	Road Freight Conductors (through freight)	31	37	32	38	44	53	57	65	55	5
3	114	Road Freight Conductors (local and way freight)	13	11	7	4	3	6	7	9	7	
4	115	Road Passenger Baggage-men	-	-	-	-	-	-	-	-	3	
5	116	Road Passenger Brakemen and Flagmen	35	31	27	30	31	31	34	38	33	2
6	117	Road Freight Brakemen and Flagmen (through freight)	91	111	97	166	184	197	220	239	210	24
7	118	Road Freight Brakemen and Flagmen (local and way freight)	34	30	18	14	13	20	26	32	25	2
8	119	Yard Conductors and Yard Foremen	19	16	13	12	12	17	19	24	18	2
9	120	Yard Brakemen and Yard Helpers	59	48	40	58	64	74	81	95	89	9
10	121	Road Passenger Engineers and Motormen	26	28	23	19	20	21	27	29	27	2
11	122	Road Freight Engineers and Motormen (through freight)	41	50	41	56	65	77	83	94	79	8
12	123	Road Freight Engineers and Motormen (local and way freight)	14	11	7	4	4	6	9	12	8	
13	124	Yard Engineers and Motormen	22	17	13	16	15	18	22	26	22	2
14	125	Road Passenger Firemen and Helpers	23	22	19	20	19	20	26	25	23	2
15	126	Road Freight Firemen and Helpers (through freight)	41	50	42	72	85	97	97	114	98	11
16	127	Road Freight Firemen and Helpers (local and way freight)	14	11	7	6	6	9	10	13	8	
17	128	Yard Firemen and Helpers	20	16	12	19	21	26	24	28	22	2
18	907	TOTAL (Transportation - Train and Engine)	503	508	414	547	600	687	761	862	744	80

RECAPITULATION OF LINES 1 TO 18 DIVISION NOS. 111 TO 128.												
19	121 & 125	Enginemen - passenger service	49	50	42	39	39	41	53	54	50	4
20	122 & 126	Enginemen - through freight service	82	100	83	128	150	174	180	208	177	20
21	123 & 127	Enginemen - local freight service	28	22	14	10	10	15	19	25	16	1
22	124 & 128	Enginemen - yard service	42	33	25	35	36	44	46	54	44	5
23	111, 115 & 116	Trainmen - passenger service	55	50	43	43	45	46	53	57	53	4
24	113 & 117	Trainmen - through freight service	122	148	129	204	228	250	277	304	265	29
25	114 & 118	Trainmen - local freight service	47	41	25	18	16	26	33	41	32	3
26	119 & 120	Trainmen - yard service	78	64	53	70	76	91	100	119	107	11
27	907	TOTAL (Transportation - Train and Engine)	503	508	414	547	600	687	761	862	744	80

Defendant's Exhibit No. 314 (Witness B.S. Sines)

Apr. 9, 1941

ATCHISON, TOPEKA & SANTA FE RAILWAY COMPANY

FREIGHT TONNAGE RATINGS OF LOCOMOTIVES
BETWEEN NEEDLES, CALIFORNIA AND CLOVIS, NEW MEXICO

BETWEEN NEEDLES AND SELIGMAN						
WESTWARD	CLASS OF POWER					
	9-1600 1674-3010 Tons	1950 Tons	1798 3160 Tons	3129 Tons	3800 3900 Tons	5001 Tons
	(a)	(b)	(c)	(d)	(e)	(f)
Seligman to Pica	1900	1450	1750	1400	2700	3000
Pica to Yampai	1700	1250	1500	1400	2100	2400
Yampai to Needles	3000	2000	2500	2400	3500	3750
EASTWARD						
Needles to Topock	2300	1600	2100	2000	3000	3250
Topock to Louise	1600	1100	1400	1300	2050	2350
Louise to Hackberry	1700	1200	1500	1400	2200	2450
Hackberry to Yampai	1600	1100	1350	1300	2050	2350
Yampai to Seligman	2200	1500	1700	1650	3000	3500

BETWEEN SELIGMAN AND BELEN									
WESTWARD	CLASS OF POWER								
	5001 Tons	3800 Tons	1674 Tons	900 1600 3010 Tons	1798 3160 Tons	3129 Tons	1950 Tons	3700 Tons	1309 1337 3500 Tons
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
Belen to Dalies	-	2300	1650	1650	1400	1350	1250	1350	1000
Dalies to Gonzales	-	4000	3000	3000	2800	2500	1800	2400	1300
Gonzales to Winslow	-	CL	CL	CL	CL	CL	CL	CL	CL
Winslow to Riordan	2300	2000	1650	1600	1350	1300	1050	1150	825
Riordan to Williams	2300	2150	1700	1650	1400	1350	1100	1175	875
Williams to Seligman	2300	2000	1650	1600	1350	1300	1050	1150	825
EASTWARD									
Seligman to Ash Fork	2300	2000	1700	1650	1350	1300	1100	1175	850
Ash Fork to Williams	1650	1600	1300	1250	900	875	775	875	625
Williams to Nevin	2300	2000	1700	1650	1350	1300	1100	1175	850
Nevin to Riordan	2300	2500	1900	1850	1500	1450	1300	1200	900
Riordan to Winslow	CL	CL	CL	CL	CL	CL	2000	2000	1600
Winslow to Gonzales	-	4000	2900	2900	3100	2500	1600	2400	1300
Gonzales to Belen	-	4000	3200	3100	3400	2600	2150	2400	1350

BETWEEN BELEN AND CLOVIS									
CLASS OF POWER									
1000					900				

	(a)	(b)	(c)	(d)	(e)	(f)
Seligman to Pica	1900	1450	1750	1600	2700	3000
Pica to Yampai	1700	1250	1500	1400	2100	2400
Yampai to Needles	3000	2000	2500	2400	3500	3750
EASTWARD						
Needles to Topock	2300	1600	2100	2000	3000	3250
Topock to Louise	1600	1100	1400	1300	2050	2350
Louise to Hackberry	1700	1200	1500	1400	2200	2450
Hackberry to Yampai	1600	1100	1350	1300	2050	2350
Yampai to Seligman	2200	1500	1700	1650	3000	3500

BETWEEN SELIGMAN AND BELEN									
	CLASS OF POWER								
	5001	3800	1674	900	1798	3129	1950	3700	1309
	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons
WESTWARD	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
Belen to Belice	-	2300	1650	1650	1400	1350	1250	1350	1000
Belice to Gonzales	-	4000	3000	3000	2800	2500	1800	2400	1300
Gonzales to Winalow	-	CL	CL	CL	CL	CL	CL	CL	CL
Winalow to Riordan	2300	2000	1650	1600	1350	1300	1050	1150	825
Riordan to Williams	2300	2150	1700	1650	1400	1350	1100	1175	875
Williams to Seligman	2300	2000	1650	1600	1350	1300	1050	1150	825
EASTWARD									
Seligman to Ash Fork	2300	2000	1700	1650	1350	1300	1100	1175	850
Ash Fork to Williams	1650	1600	1300	1250	900	875	775	875	625
Williams to Nevin	2300	2000	1700	1650	1350	1300	1100	1175	850
Nevin to Riordan	2300	2500	1900	1850	1500	1450	1300	1200	900
Riordan to Winalow	CL	CL	CL	CL	CL	CL	2000	2000	1600
Winalow to Gonzales	-	4000	2900	2900	3100	2500	1600	2400	1300
Gonzales to Belen	-	4000	3200	3100	3400	2600	2150	2400	1350

BETWEEN BELEN AND CLOVIS											
	CLASS OF POWER										
	1000	1309	1400	1800	900	3800	3160	5000	3430	3450	3700
	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons
WESTWARD	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
Clovis to Vaughn	1400	1500	700	1800	3700	3900	3500	4750	1800	3000	3200
Vaughn to Mountainair	1400	1500	700	1800	3700	4000	3500	4750	1800	3000	3200
Mountainair to Belen	3000	3100	1500	4500	5000	5000	5000	6000	4500	5000	5000
EASTWARD											
Belen to Mountainair	1000	1100	500	1300	2200	2500	1800	6000	1300	1600	1700
Mountainair to Vaughn	1600	1700	800	2500	4500	5000	4500	6000	2500	4000	4300
Vaughn to Clovis	1600	1700	800	2500	4500	5000	4500	6000	2500	4000	4300

= Helper

CL = Car Limit

SOUTHERN PACIFIC COMPANY
(Pacific Lines)

REDISPATCH STUDY - LOCOMOTIVE MILEAGE
YUMA, ARIZONA TO EL PASO, TEXAS
FOR PERIOD JUNE AND AUGUST, 1938

LINE NO.	TYPE OF LOCOMOTIVE (a)	ACTUAL LOCOMOTIVE MILES (b)	REDISPATCHED LOCOMOTIVE MILES (c)
1	Mogul	296	120
2	Consolidation 9, 10	3,958	3,122
3	Mikado 2, 4	2,764	298
4	Mikado 5 - 9	71,324	13,884
5	Pacific 12	456	341
6	Mountain 1 - 5	3,738	1,126
7	F - 1	155,239	27,036
8	F 3 - 5	81,877	10,437
9	SP 1 - 3	221,619	64,916
10	AC 8	-	277,153
11	TOTAL	541,271	398,433
12	SAVING FOR PERIOD		142,838
13	SAVING FOR YEAR - Saving for period expanded in ratio of 17.89% to 100.00%		798,424

Defendant's Exhibit No. 316 (Witness B.S. Sines)
Apr. 9, 1941

SOUTHERN PACIFIC COMPANY
(Pacific Lines)

REDISPATCH STUDY - LOCOMOTIVE MILEAGE
YUMA, ARIZONA TO EL PASO, TEXAS
FOR PERIOD APRIL 4TH TO APRIL 30TH, 1940
ACTUAL OPERATION COMPARED WITH REDISPATCHED OPERATION
WITH NO RESTRICTION AND- USING AC POWER AND LONG SIDINGS.

LINE NO.	TYPE OF LOCOMOTIVE (a)	ACTUAL LOCOMOTIVE MILES (b)	REDISPATCHED LOCOMOTIVE MILES (c)
1	Consolidation 9, 10	280	280
2	Mikado 2, 4	149	149
3	Mikado 5 - 9	17,762	5,874
4	Pacific 5, 11, 12	96	374
5	Mountain 1 - 5	1,649	551
6	F 1	21,443	248
7	F 3 - 5	110,488	22,805
8	SP 1 - 3	132,419	27,635
9	AC 8	-	164,762
10	TOTAL	284,286	222,678
11	SAVING FOR PERIOD	61,608	

Defendant's Exhibit No. 317 (Witness B.S. Sines)
Apr. 9, 1941

SOUTHERN PACIFIC COMPANY
(Pacific Lines)

REDISPATCH STUDY - LOCOMOTIVE SHOP REPAIRS
YUMA, ARIZONA TO EL PASO, TEXAS
FOR PERIOD JUNE AND AUGUST, 1938

LINE NO.	TYPE OF LOCOMOTIVE (a)	ACTUAL LOCOMOTIVE MILES (b)	SHOP REPAIR COST PER MILE (CENTS) (c)	TOTAL SHOP REPAIRS FOR PERIOD (d)	REDISPATCHED LOCOMOTIVE MILES (e)	SHOP REPAIR COST PER MILE (CENTS) (f)	TOTAL SHOP REPAIRS FOR PERIOD (g)
1	Mogul	296	10.01	\$ 29.63	120	10.01	\$ 12.01
2	Consolidation 9, 10	3,958	12.96	512.96	3,122	12.96	404.61
3	Mikado 2, 4	2,764	14.35	396.63	298	14.35	42.76
4	Mikado 5 - 9	71,324	13.73	9,792.79	13,884	13.73	1,906.27
5	Pacific 12	456	13.36	60.92	341	13.36	45.56
6	Mountain 1 - 5	3,738	13.36	499.40	1,126	13.36	150.43
7	F - 1	155,239	13.36	20,739.93	27,036	13.36	3,612.01
8	F 3 - 5	81,877	16.67	13,648.90	10,437	16.67	1,739.85
9	SP 1 - 3	221,619	19.24	42,639.50	64,916	19.24	12,489.84
10	AC 8	-	-	-	277,153	22.18	61,472.54
11	TOTAL	541,271	-	\$88,320.66	398,433	-	\$81,875.88
12	SAVING FOR PERIOD						\$6,444.78
13	SAVING FOR YEAR (SAVING FOR PERIOD EXPANDED IN RATIO OF 17.89% TO 100.00%)						\$36,024.48

Defendant's Exhibit No. 318 (Witness B.S. Sines)
Apr. 9, 1941

SOUTHERN PACIFIC COMPANY
(Pacific Lines)

REDISPATCH STUDY - LOCOMOTIVE SHOP REPAIRS
YUMA, ARIZONA TO EL PASO, TEXAS
FOR PERIOD APRIL 4TH TO APRIL 30TH, 1940
ACTUAL OPERATION COMPARED WITH REDISPATCHED OPERATION
WITH NO RESTRICTION AND USING AC POWER AND LONG SIDINGS

LINE NO.	TYPE OF LOCOMOTIVE (a)	ACTUAL LOCOMOTIVE MILES (b)	SHOP REPAIRS COST PER MILE (CENTS) (c)	TOTAL SHOP REPAIRS PERIOD (d)	REDISPATCHED LOCOMOTIVE MILES (e)	SHOP REPAIR COST PER MILE (CENTS) (f)	TOTAL SHOP REPAIRS FOR PERIOD (g)
1	Consolidation 9, 10	280	12.96	\$ 36.29	280	12.96	\$ 36.29
2	Mikado 2, 4	149	14.35	21.38	149	14.35	21.38
3	Mikado 5 - 9	17,762	13.73	2,438.72	5,874	13.73	806.50
4	Pacific 5 - 12	96	13.36	12.83	374	13.36	49.97
5	Mountain 1 - 5	1,649	13.36	220.31	551	13.36	73.61
6	F-1	21,443	13.36	2,864.78	248	13.36	33.13
7	F-3 - 5	110,488	16.67	18,418.35	22,805	16.67	3,801.59
8	SP 1 - 3	132,419	19.24	25,477.42	27,635	19.24	5,316.97
9	AC - 8	-	-	-	164,762	22.18	36,544.21
10	TOTAL	284,286	-	\$49,490.08	222,678	-	\$46,683.85
11	SAVING FOR PERIOD						\$2,806.43

TRAINING

THIS SPACE RESERVED FOR ANNOUNCEMENTS

[Signature]

1. This report shall be rendered for all employees and to cover handling, yard and outside work, and for all employees, drivers, conductors, flagmen, train inspectors, trainmen, and all who are on the line when reporting, to be delivered daily. The report shall be rendered and signed by the employee at the time of reporting, and by the conductor for the train crew. It shall be prepared and rendered as it shall be rendered and signed by the ranking employee when time is reported thereon. Reports shall be rendered continuously for each month beginning with the 1st.

2. The report shall be dated as of the date on which the employee has been working.

3. Under "Arrive" shall be shown any transportation of the kind of day. If an employee is released from duty for any period between the time of first going on duty and the time finally released from duty each day, such time as shown under "Arrive" during the place at which the employee is released from duty, which is between the time at which it is made. Time of absence for leave taken by yard crews shall also be shown under "Arrive". If the whole or part of service in discharging the train at which the discharging began and ended and the time at which the employee was discharged are shown. When a crew or employee is released before the completion of any the name of the conductor or supervisor of the crew, relieving or the name of the employee relieving will be shown.

4. Whenever time is shown A. M. or P. M. shall be given.

5. In reporting delays the cause of such delay, the place at which it occurred, the time it began and the time it ended shall be given. Delays due to different causes shall be shown separately.

6. All delays to passenger trains shall be shown, as in freight trains of less than 15 minutes at any one place and of less than 1 hour. Delays in yard and switching areas where there is no railroad activity in yard track need not be shown.

7. When any is obtained against hold-over-for-better service, there is given A. A. "Remarks" place and time that up to previous service.

8. If crew or employee is released but crew carries their place of release indicated in space B. A. "Remarks" and 15 minutes or less than 1 hour before the end of the day, there shall be shown such time under "Remarks" and 15 minutes A. M. or P. M.

[illegible][illegible]

Plaintiff's Exhibit No. 322 (Witness Cheek)

1. Ex. No. 321-4 Witness CHECK

[illegible]

DELAY REPORT

No.	DURATION OF DELAY			REASON FOR DELAY	REMARKS
	1st	2nd	3rd		
1	8:15	8:45	3	Water	
2	7:50	7:57	7	Switching train	
3				Progre	
4	8:31	8:45	14	No 3	
5	7:24	7:37	13	Water	

[illegible]

DELAY REPORT

[illegible]

IN-CASE OF DOUBLE HOLDING

MONTHLY REPORT OF RAILWAY ACCIDENTS

TO THE BUREAU OF STATISTICS

INTERSTATE COMMERCE COMMISSION

SHEET No. 89

Name of reporting carrier (1) } SOUTHERN PACIFIC COMPANY-Pacific Lines For the month of APRIL 1931.

If "joint operation," or crossing collision, name roads involved (2)	If "joint operation," name road whose superintendent is in charge of track (3)
--	--

Carrier's number (4) 3390 Carrier's division (5) Los Angeles Date of accident (6) 19th Time of day (7) 1005PM C. C. (8) S-J

Place of accident: }	Name of State (9) }	Cal.	Nearest station (10) }	Flowing Well	Nearest milepost (11) }	673.	Estimated distance and direction from station named (12) }	At
----------------------	---------------------	------	------------------------	--------------	-------------------------	------	--	----

Kind of accident (13) } Train Service } Clear, cloudy, } Clear } Raining or } Neither Daylight } Dark
or foggy? (14) } snowing? (15) } or dark? (16)

Cause (briefly) (17) Thrown off balance in caboose due to undesired emergency application

Kind of train	Train No.	Number of cars in train	Engine Nos.	Direction	Speed	m. p. h.
Frt.	(18a)	Extra (185)	125	5002 (20)	West	30 (21)

(22) Method of operation

(Answers to questions 22 and 23 required only in connection with collisions)

(23) Number of main tracks

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
I. C. C. use only																																												

(24) DETAILS OF CASUALTIES TO PERSONS

Name and address of person (a)	Class of person (b)	I. C. C. use only					Killed or nature and extent of injuries (c)	I. C. C. use only			Days disability A = Actual P = Probable (d)
		29	30	31	32	33		34	35	36	
Wm. H. Haysman, 40-M-M, Indio, Cal.	Brakeman A-137						Right arm bruised above elbow.				p-30
A TRUE COPY											

A TRUE COPY

NAME OF ROAD	(a) Equipment	(b) Way and Structures	(c) Clearing Wreck	(d) Total
	\$	\$	\$	\$
TOTAL				

(26) Detail of cause, nature, and circumstances of accident; responsibility and experience of employees responsible.

While descending the Iris Hill, to control speed of train

Kind of train	Train No.	Number of cars in train	Engine Nos.	Direction	Speed	
Frt.	(18a)	Extra	125	5002	(20)	West
		(18b)	(19)			(21)
(22) Method of operation						30 m. p. h.

(22) Method of operation

(Answers to questions 22 and 23 required only in connection with collisions)

(23) Number of main tracks

(Answers to questions 22 and 23 required only in connection with collisions)

(23) Number of main tracks

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

(24) DETAILS OF CASUALTIES TO PERSONS

I. C. C. use only

(24) DETAILS OF CASUALTIES TO PERSONS

Name and address of person (a)	Class of person (b)	I. C. C. use only					Killed or nature and extent of injuries (c)	I. C. C. use only			Days disability A = Actual P = Probable (d)
		29	30	31	32	33		34	35	36	
Wm. E. Hausman, 40-M-M, Indio, Cal.	Brakeman A-137						Right arm bruised above elbow.				P-30
A TRUE COPY											
NAME OF ROAD											

A TRUE COPY

NAME OF ROAD	(a) Equipment	(b) Way and Structures	(c) Clearing Wreck	(d) Total
		\$	\$	\$
TOTAL				

(26) Detail of cause, nature, and circumstances of accident:

(26) Detail of cause, nature, and circumstances of accident; responsibility and experience of employees responsible.

While descending the Iris Hill, to control speed of train engineer placed automatic brake valve in lap position for a few seconds and just as he started to make a service application, brakes suddenly went into and undesired emergency, causing a sudden and abrupt stop on the rear end, resulting in brakeman Hausman, who was seated on bench on south side of caboose,

(ORIGINAL)

(Signature) (ORIGINAL SIGNED) E. F. DONNATIN (Title) SUPERINTENDENT

(SEE INSTRUCTIONS ON REVERSE OF SHEET)

(over)

5919

• 12--1000

ICC -Form # "T" -#2

being thrown against the desk and to floor, sustaining injuries shown. As no report of the undesired action was made on arrival of train at Indio, no examination of train was made to locate cause.

INSTRUCTIONS REGARDING ENTRIES ON FACE OF THIS SHEET

(References are to sections of the Commission's Rules governing Monthly Reports of Railway Accidents, 1922 Revision)

1. The significant words in the name of the reporting carrier should be given in full, so far as practicable.
- 2 and 3. Concerning train accidents occurring on terminal or other track operated jointly or in common, or classifiable as crossing collisions; see, respectively, sections 5, 5a, and 5b, and 8 (e) and (f) of Rules.
4. Enter the number of the accident as recorded in the carrier's operating records.
5. Enter the name of the operating division on which the accident occurred.
6. State the day of the month.
7. State the time o'clock in hours and minutes, a.m. or p.m.
8. Enter a capital letter to indicate the class (see section 20 of the Rules) and a small letter to indicate the subclass (see sections 8 to 13).
9. The customary abbreviation for the name of a State may be used.
10. Give the name of the station nearest to the place where the accident occurred (or was first discovered) and indicate whether it occurred on main track, or on yard track or sidings. This information should be given both for train accidents and train-service accidents. Main tracks within yards are not to be regarded as yard tracks. Sidings not used exclusively as passing tracks are to be regarded as yards. See section 25 of Rules.
11. The giving of the number of the milepost nearest to the place of the accident is optional; and instead of giving it in the case of either a train or a train-service accident, if the accident occurred at a station, that fact should be stated, or, if it occurred within a yard, the name or description of the yard should be given.
12. Distance, estimated in miles or rods, should be given when appropriate.
13. Show the kind of train, as freight, passenger, work, switching, etc. If light engine, state to what class of service assigned. See section 26 of Rules.
14. Give the time-table direction.
15. Give the estimated speed in miles per hour.
16. In case of a collision, show whether trains were operated under a block system at point of accident, stating specifically what method of blocking, if any, was employed.
17. Give number of main tracks in use in locality of accident.
18. (b) See section 31 of Rules.

INSTRUCTIONS REGARDING ENTRIES ON FACE OF THIS SHEET

(References are to sections of the Commission's Rules governing Monthly Reports of Railway Accidents, 1922 Revision)

1. The significant words in the name of the reporting carrier should be given in full, so far as practicable.
- 2 and 3. Concerning train accidents occurring on terminal or other track operated jointly or in common, or classifiable as crossing collisions, see, respectively, sections 5, 5a, and 5b, and 8 (a) and (f) of Rules.
4. Enter the number of the accident as recorded in the carrier's operating records.
5. Enter the name of the operating division on which the accident occurred.
6. State the day of the month.
7. State the time o'clock in hours and minutes; a.m. or p.m.
8. Enter a capital letter to indicate the class (see section 20 of the Rules) and a small letter to indicate the subclass (see sections 8 to 13).
9. The customary abbreviation for the name of a State may be used.
10. Give the name of the station nearest to the place where the accident occurred (or was first discovered) and indicate whether it occurred on main track, or on yard track or sidings. This information should be given both for train accidents and train-service accidents. Main tracks within yards are not to be regarded as yard tracks. Sidings not used exclusively as passing tracks are to be regarded as yards. See section 25 of Rules.
11. The giving of the number of the milepost nearest to the place of the accident is optional; and instead of giving it in the case of either a train or a train-service accident, if the accident occurred at a station, that fact should be stated, or, if it occurred within a yard, the name or description of the yard should be given.
12. Distance, estimated in miles or rods, should be given when appropriate.
18. Show the kind of train, as freight, passenger, work, switching, etc. If light engine, state to what class of service assigned. See section 26 of Rules.
20. Give the time-table direction.
21. Give the estimated speed in miles per hour.
22. In case of a collision, show whether trains were operated under a block system at point of accident, stating specifically what method of blocking, if any, was employed.
23. Give number of main tracks in use in locality of accident.
24. (b) See section 31 of Rules.
24. (c) See section 30 of Rules.
25. State the amount of damage to equipment (including damage to foreign cars), to other railway property, and cost of clearing wreck, with the total amount as provided. In case of a "joint-operation" accident, figures for the several items should be given for each road involved, the name of which should be clearly indicated. If no other road is involved, respondent may make the requisite entries on "Total" line only. See section 29 of Rules.
26. For information in general pertinent to the matter of returns, see sections 1 to 13, 17, 20, and 22 to 31 of Rules. If the space afforded on Form T is insufficient for all the requisite entries concerning a particular accident, blank sheets of like size, suitably identified and completed, may be attached to a single Form T containing the introductory details applicable to the accident as a whole.

SHEET No. 90

Name of reporting carrier (1) } Southern Pacific Co.-Pacific Lines

For the month of June 1935 19

If "joint operation," or cross-
ing collision, name roads }
involved (2)

If "joint operation," name road whose superintendent is in charge of track (3)

Carrier's
number (4) } 509

Carrier's di-
vision (5) } Los Angeles

Date of accident (6) } 24th

Time of day (7) } 11:15 PM I. C. C. } (8) } S-1

Place of accident: } Name of State (9) } Cal. } Nearest station (10) } Stoneman

Nearest
milepost (11) } 489

Estimated distance and direction from station named (12) } At

Kind of accident (13) } Train Service Clear, cloudy, }
or foggy? (14) } Clear

Raining or snowing? (15) } Neither Daylight or dark? (16) } Dark

Cause (briefly) (17) Thrown off balance in caboose by slack action of train.

Kind of train	Frt.	Train No. (18a)	826	Number of cars in train (18b)	96	Engine Nos. (19)	5048 5007	Direction (20)	East	Speed (21)	30	m. p. h.
---------------	------	-----------------	-----	-------------------------------	----	------------------	--------------	----------------	------	------------	----	----------

(32) Method of operation:

(Answers to questions 23 and 24 required only in connection with collisions)

(23) Number of main tracks

(Answers to questions 23 and 24 required only in connection with collisions)

(23) Number of main tracks _____

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

(24) DETAILS OF CASUALTIES TO PERSONS

I. C. C. use only

(24) DETAILS OF CASUALTIES TO PERSONS

Name and address of person (a)	Class of person (b)	I. C. C. use only					Killed or nature and extent of injuries (c)	I. C. C. use only			Days disability A-Actual P-Probable (d)
		39	38	37	36	35		34	33	32	
Wm. J. Hausman, 48-E-M, Los Angeles, Cal.	Brakeman A-118						Bruised ribs and side. 3/15/1923				P-21
A TRUE COPY											
NAME OF ROAD											

A TRUE COPY

(24) COST.

NAME OF ROAD

(a) Equipment

(b) Way and Structures

(c) Clearing Wren

(d)PTotal

Daylight
or dark? (16) } Dark

Cause (briefly) (17) Thrown off balance in caboose by slack action of train.

Kind of train	Frts.	Train No. (18a)	826	Number of cars in train (18b)	96	Engine Nos. (19)	5048 5007	Direction (20)	East	Speed (21)	30	m. p. h.
---------------	-------	-----------------	-----	-------------------------------	----	------------------	--------------	----------------	------	------------	----	----------

(22) Method of operation

(22) Method of operation

(Answers to questions 23 and 24 required only in connection with collisions)

(23) Number of main tracks

(Answers to questions 22 and 23 required only in connection with collisions)

(23) Number of main tracks

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

(24) DETAILS OF CASUALTIES TO PERSONS

I. C. C. use only

(24) DETAILS OF CASUALTIES TO PERSONS

[illegible]

A TRUE COPY

NAME OF ROAD		(a) Equipment	(b) Way and Structures	(c) Clearing Wreck	(d) Total
(25) COST		\$	\$	\$	\$
TOTAL					
(26) Detail of cause, nature, and circumstances of accident; responsibility and experience of operator					

TOTAL	
(26) Detail of cause, nature, and circumstances of accident; responsibility and experience of employees responsible.	
claims he was the Brakeman, while seated on	

claims he was thrown off balance by slack action, striking his side against aboose desk. There was no unusual handling of train, no defects in equipment, and accident was due to failure of brakeman to properly protect himself while riding over district with which he was thoroughly familiar.

(ORIGINAL SIGNED)

(Signature)

C. F. DONNATIN

(Title).

SUPERINTENDENT

(SEE INSTRUCTIONS ON REVERSE OF SHEET)

5921

19-1000

INSTRUCTIONS REGARDING ENTRIES ON FACE OF THIS SHEET

(References are to sections of the Commission's Rules governing Monthly Reports of Railway Accidents, 1922 Revision)

1. The significant words in the name of the reporting carrier should be given in full, so far as practicable.
- 2 and 3. Concerning train accidents occurring on terminal or other track operated jointly or in common, or classifiable as crossing collisions, see, respectively, sections 5, 5a, and 5b, and 8 (e) and (f) of Rules.
4. Enter the number of the accident as recorded in the carrier's operating records.
5. Enter the name of the operating division on which the accident occurred.
6. State the day of the month.
7. State the time o'clock in hours and minutes, a.m. or p.m.
8. Enter a capital letter to indicate the class (see section 20 of the Rules) and a small letter to indicate the subclass (see sections 8 to 13).
9. The customary abbreviation for the name of a State may be used.
10. Give the name of the station nearest to the place where the accident occurred (or was first discovered) and indicate whether it occurred on main track, or on yard track or sidings. This information should be given both for train accidents and train-service accidents. Main tracks within yards are not to be regarded as yard tracks. Sidings not used exclusively as passing tracks are to be regarded as yards. See section 25 of Rules.
11. The giving of the number of the milepost nearest to the place of the accident is optional; and instead of giving it in the case of either a train or a train-service accident, if the accident occurred at a station, that fact should be stated, or, if it occurred within a yard, the name or description of the yard should be given.
12. Distance, estimated in miles or rods, should be given when appropriate.
13. Show the kind of train, as freight, passenger, work, switching, etc. If light engine, state to what class of service assigned. See section 26 of Rules.
14. Give the time-fable direction.
15. Give the estimated speed in miles per hour.
16. In case of a collision, show whether trains were operated under a block system at point of accident, stating specifically what method of blocking, if any, was employed.
17. Give number of main tracks in-use in locality of accident.
18. (b) See section 31 of Rules.
19. (c) See section 30 of Rules.
20. State the amount of damage to equipment (including damage to foreign cars), to other railway property, and cost of clearing wreck, with the total amount as provided. In case of a "joint-operation" accident, figures for the several items should be given for each road involved, the name of which should be clearly indicated. If no other road is involved, respondent may make the requisite entries on "Total" line only. See section 29 of Rules.
21. For information in general pertinent to the matter of returns, see sections 1 to 13, 17, 20, and 22 to 31 of Rules. If the space afforded on Form T is insufficient for all the requisite entries concerning a particular accident, blank sheets of like size, suitably identified and completed, may be attached to a single Form T containing the introductory details applicable to the accident as a whole.

MONTHLY REPORT OF RAILWAY ACCIDENTS

ARIZONA CORPORATION COMMISSION

SHEET No.

ACC #8607

Carrier (1) Southern Pacific Company - Pacific Lines For the month of October, 1937
if "joint operation," or crossing collision, name roads involved (2) - - - If "joint operation," name road whose Superintendent is in charge of track (3) - - -

Carrier's number (4) 661 Carrier's division (5) Tucson Date of accident (6) 21st Time of day (7) 6:35 AM ICC Class (8) S-3
Place of accident (9) Ariz Nearest station (10) Yuma Yard Nearest milepost (11) 733 Estimated distance and direction from station named (12) At
Kind of accident (13) Train Service Clear, cloudy or foggy? (14) Clear Raining or snowing? (15) No Daylight or dark? (16) Day

Cause (briefly) (17) Automatic train brakes went into undesired emergency, causing rough stop

Kind of train (18) Thru Train No. (18A) Extra Number of cars in train (18B) 122 Engine Nos. (19) 5025 Direction (20) East Speed (21) 12 m. p. h.

(22) Method of operation (23) Number of main tracks
(Answers to questions 21 and 22 required only in connection with collisions.)

(24) DETAILS OF CASUALTIES TO PERSONS

Name and address of person (a)	Class of person (b)	Killed or nature and extent of injuries (c)	Days disability, (if killed, so state)	
			Actual (d)	Probable (e)
O. C. Klaus (49) M.M. - 733 Woodbury Road Altadena, Calif.	A-113 Road Frt. Conductor	Left hip and shoulder bruised, left wrist sprained	F-21 4-27-20	
W. H. Hausman (52) M.M. - 2684 Thorpe St., Los Angeles, Calif.	A-117 Road Frt. Brakeman	Nose badly cut and bruised, 2 ribs fractured, left knee sprained	P-14 3-15-23	

(25) COST	NAME OF ROAD	(a) Equipment	(b) Way and Structures	(c) Clearing Wreck	(d) Total
			None	None	None

INSTRUCTIONS REGARDING ENTRIES ON FACE OF THIS SHEET

This Report Must Be Rendered Monthly to the ARIZONA CORPORATION COMMISSION, Phoenix, Arizona.
Accidents resulting in loss of life must be reported by telegraph, at the earliest possible moment.

1. The significant words in the name of the reporting carrier should be given in full, so far as practicable.
- 2 and 3. Concerning train accidents occurring on terminal or other track operated jointly or in common, or classifiable as crossing collisions, give full details as to responsibility.
4. Enter the number of the accident as recorded in the carrier's operating records.
5. Enter the name of the operating division on which the accident occurred.
6. State the day of the month.
7. State the time o'clock in hours and minutes, a.m. or p.m.
8. Enter a capital letter to indicate the class and a small letter to indicate the subclass.
10. Give the name of the station nearest to the place where the accident occurred (or was first discovered) and indicate whether it occurred on main track, or on yard track or sidings. This information should be given both for train accidents and train-service accidents. Main tracks within yards are not to be regarded as yard tracks. Sidings not used exclusively as passing tracks are to be regarded as yards.
11. The giving of the number of the milepost nearest to the place of the accident is optional; and instead of giving it in the case of either a train or a train-service accident, if the accident occurred at a station, that fact should be stated, or, if it occurred within a yard, the name or description of the yard should be given.
12. Distance, estimated in miles or rods, should be given when appropriate.
13. Show the kind of train, as freight, passenger, mixed, special, official, pay, work, switching, etc. If light engine, state to what class of service assigned.
14. Give the time-table direction.
15. Give the estimated speed in miles per hour.
22. In case of a collision, show whether trains were operated under a block system at point of accident, stating specifically what method of blocking, if any, was employed.
23. Give number of main tracks in use in locality of accident.
25. State the amount of damage to equipment (including damage to foreign cars), to other railway property, and cost of clearing wreck, with the total amount as provided. In case of a "joint-operation" accident, figures for the several items should be given for each road involved, the name of which should be clearly indicated. If no other road is involved, respondent may make the requisite entries on "Total" line only.
26. If the space afforded on this form is insufficient for all the requisite entries concerning a particular accident, blank sheets of like size, suitably identified and completed, may be attached to a single Form 195 containing the introductory details applicable to the accident as a whole.

[fol. 5925] PLAINTIFF'S EXHIBIT No. 326. APR. 15, 1941

[fol. 5926]

WARNING

To Caretakers and Others

A freight train may start or stop suddenly at any time.

Guard against falling or being thrown over or between cars.

Avoid stepping on uncoupling lever as a break in two of train may be caused.

Failure in either case may result in your injury or death.

SOUTHERN PACIFIC LINES

In Texas and Louisiana

[fol. 5927]

Sheet 1 of 8 sheets

PLAINTIFF'S EXHIBIT No. 327

Admitted and Filed Apr. 16, 1941

Excerpts from a Volume Entitled "Santa Fe—Instructions for Operating and Maintaining Air Brake Apparatus (Form 2501 Standard)

Brake Sticking (Page 12)

As a general rule the cause for brakes sticking is due to the failure to raise the brake pipe pressure quickly above the auxiliary reservoir pressure, which must be done in order to move the triple valve parts to release position.

It is more difficult to release the brakes on a long than on a short train, and there is a difference between triple valves that stick and fail to release, and those that release with the others and reapply, or those that creep on when the brakes are not being used. The first mentioned may be due to failure to raise the brake pipe pressure promptly, or an individual triple valve having a bad packing ring; the second mentioned (which is most likely to occur on the

head end) can be due to a slight overcharge; while the third mentioned (the creeper) can only be caused by an erratic working feed valve, a closed angle cock, or the engineman moving brake valve to release and back to running position after train is charged; and with a little study of the operation of the equipment, if the experience of every day practice is made use of, much of the trouble can be anticipated and prevented.

Enginemen, Trainmen and Inspectors (Page 16)

The difference in grade over which the train may be passing when the brakes are applied—for example, one portion of the train may be on an ascending grade, when the grade would assist the brake in stopping the cars; and another portion of the train may be on a descending grade, in which case the grade would oppose the effort of the brake to stop the cars. Such a condition requires care and judgment on the part of the engineman as regards the time and manner of operating the brake to prevent as far as possible severe shocks and strains due to the action of the slack in the train.

[fol. 5928]

Sheet 2 of 8 sheets

Enginemen, Trainmen and Inspectors (Page 16)

While the loss in shoe friction, or holding power, is a serious item when the speed is raised considerably, the increased work the brake will have to do to stop a car on account of the increased speed is not generally appreciated. To illustrate the latter, with all else the same if the speed of a car was increased from 10 miles per hour to 20 miles per hour the brake would have to do four times as much work to stop it. At 30 as compared with 10 miles per hour the work would be nine times as great; while at 40 as compared with 10 miles per hour the work would be sixteen times as great.

This is due entirely to the loss of friction between the shoe and wheel caused by the increase in speed.

The brake safety of a train is measured by the distance that would be required for making an unexpected stop, and the distance required will be more on a descending grade and less on an ascending grade than on the level. Dividing

the total train tonnage by the number of good brakes will give the number of tons each brake will have to control or stop.

Shocks from Application and Release (Page 17)

Shocks are caused by the difference in holding power and speed throughout the train and to consequent running of the slack. The longer the train the greater may these differences become. If the brakes are applied while the slack is stretched it will run toward the engine and the lower the speed and the heavier the application, the greater will be the shock, while if the brakes are released on a moving train the slack will run out unless some means is at hand for preventing it (see "ET Equipment" and "K Triple Valve") and will result in pulling strains on the draft gear which will be aggravated by low speed and heavy brake pipe reduction. Parts of the train being on different grades at the same time, and car loading are among the causes for one portion of the train slowing down more rapidly than another. These are conditions that have to be met, and enginemen and trainmen are expected to understand them and exercise such judgment as will prevent damaging shocks.

Train Handling

(Pages 28-30)

Excess Pressure and Releasing Brakes

Excess pressure is the amount in pounds in the main res-

[fol. 5929]

Sheet 3 of 8 sheets

ervoir over that in the brake pipe and auxiliary reservoirs and is required to charge and release brakes. It is indicated with brakes off or on by the difference between the two hands of the gage, provided, if brakes are applied, the brake pipe reduction does not exceed that necessary to fully apply any one or more brakes. The amount to be carried in any service will be determined by those in authority.

It follows from the foregoing that the nearer brakes are applied to full service application the more promptly will they commence to release. Also that as a light reduction results in less excess, it is more liable to be followed by brakes failing to release. Where made from standard pressure it is also likely to be followed by overcharging in the attempt to insure release. This becomes more pronounced

the longer the train. Therefore, it is undesirable as a general rule to attempt to release following a light reduction from standard pressure.

Should a light reduction be necessary to accomplish the desired results, increase it before attempting to release if the conditions will permit.

The proper length of time to leave the brake valve in release to effect a release of all brakes, and yet avoid overcharging, depends to such an extent on the conditions just explained, the length of the brake pipe and on the main reservoir volume and whether full or partial release is used, that no fixed rule can be established. Tests have demonstrated that following a full service application with a 50 car train it often takes from 6 to 10 seconds for the release wave of air to pass from the engineer's valve to the rear car.

The most common fault by far is in not leaving the brake valve handle in release position long enough. Another one is moving it back and forth between release and running position several times, this breaking up the strong flow of air and preventing the quick and considerable rise in pressure desired at the rear end, remembering that a quick raise in pressure insures more positive release than does a slow raise even if heavy. The right way is to move the handle to release, leave it there the proper length of time, then return it to running position. With very long trains it is best within 8 to 12 seconds to move to full release and back at once to running position, in order to "kick off" any head brakes which released with the others but slightly overcharged and then reapplied. Do not practice returning to release again when the signal is given to start or when approaching a hard pull as this results in overcharging and is very liable to be followed by brakes sticking.

[fol. 5930]

Sheet 4 of 8 sheets.

Train Handling

(Page 29)

Excess Pressure and Releasing Brakes

To release the brakes on a train of 50 cars or more the brake valve handle should ordinarily be left in full release for about 15 seconds, assuming a reasonable amount of excess pressure is available. With the information given and a knowledge of the conditions surrounding each case, it re-

quires merely the exercise of judgment on the part of the engineer to insure a prompt release and avoid overcharging. The time for releasing as given does not cover recharging.

To release the brakes upon any train, it is absolutely necessary that the brake pipe pressure be raised promptly in order to insure releasing brakes. Any method of braking that does not provide for a prompt rise of brake pipe pressure upon releasing should be discouraged; because a slow increase in brake pipe pressure will not release many brakes and if a stop is not to be made at the time of release some brakes will be left applied, contributing to overheated, cracked, broken and slid flat wheels.

Where high speeds are maintained with brakes applied, the wheel heat is generated faster than it can be radiated and the wheel heat increases until it is abnormal. When brakes are held applied for long distances, the brakes that are holding well are called upon to do the braking, and it might be possible that the pressure on the good brakes is gradually increased without making the other brakes effective if the brake pipe pressure is raised slowly and increased only a few pounds and then reduced without recharging. Continuing this operation for long distances will cause the wheels on some cars to be overheated, while other cars in the train will have the wheels cold or nearly so. The conditions are the same as would be the case if several brakes failed to release and the train was operated for a considerable distance at normal speed.

In handling trains, where brakes are used for controlling the speed, the main consideration is to maintain such a speed and sufficient pressure throughout the brake system to provide for stopping in a reasonable distance. The method of braking to provide this condition must be such that the majority of brakes in any train shall be made to do their share of braking.

When operating on light grades where braking is necessary, particularly when retaining valves are not used, care must be exercised to build up the braking power in light steps by making as light brake pipe reductions as are practical for train, grade and speed conditions, adding subsequent reductions within a few seconds following the initial reduction to make the brake application as heavy as possible without exceeding a full service application by the time a release is necessary or desirable.

Train Handling

(Page 29)

Excess Pressure and Releasing Brakes

The nearer brakes are applied to full service and the quicker the application is brought about the less trouble will be experienced with brakes sticking.

The brakes should be applied gradually enough to provide for the elimination of slack action, avoiding holding on to light applications for long periods. When the brakes are applied lightly and held so there is opportunity for the brake cylinder pressure to equalize with the brake pipe pressure if any leakage exists past the emergency valve or check case gasket in the triple valve. On the other hand if the brake application is continued until the brake pipe and brake cylinder pressure equalize, and the rate of application is at the same or a greater rate than is brought about by leakage through the triple valve, the brake cylinder and auxiliary reservoir pressure will be lower, which will lessen the difficulty of releasing brakes and offset the tendency for some brakes to develop excessive brake cylinder pressure.

When the brake applications are prolonged from slight reductions the brakes having full pressures develop wheel heat at a much greater rate than others which contribute to cracked plates and broken wheels.

With a 50 car train a full service application will, unless a good portion of the train is equipped with K triple valves, cause the pressure near the head end of the brake pipe to reduce about 5 pounds faster than that at the rear end. This results in the head brakes applying in advance of the rear ones, which tends to bunch the train and compress the coupler springs. In releasing with a train of this length the head brakes commence so much before those at the rear that they are practically off, so far as holding power is concerned, before the rear ones start to release, this causing the slack to run out rapidly. How serious the results may be is largely dependent on how heavily the brakes were applied, the amount the coupler springs were compressed and how slow the train is moving. The latter is very important because of the rapid increase in holding power at low speed. At low speed it is almost sure to

break the train in two unless there is retained at the head end some powerful holding power, such as is possible with straight air, or the holding feature of the ET equipment acting on the driver and tender brakes, or unless a sufficient number of K triple valves are present at the head end of the train so their retarded release feature can prevent the running out of slack.

[fol. 5932]

Sheet 6 of 8 sheets

Service Braking (Page 31)

The critical time in regard to train damage from brake applications is while the slack is running in or out, as trains are seldom pulled in two, or buckled, from steady pulling or pushing strains; therefore if the slack can be kept stretched or bunched the liability of train damage from brake operations will be greatly reduced. This condition is most nearly obtained by applying the brakes far enough away to complete the stop without making a heavy brake pipe reduction, it will not require as heavy reduction to move the triple valves from lap to service on the second or any succeeding reduction as it would to move them from release to service with the first reduction.

A method that may be used to advantage is to keep the slack stretched by making the initial reduction before shutting off steam, then shut off steam gradually, the object in working steam being to prevent the slack running in as the brake application is made, which in turn will prevent severe jerks due to slack running out as the rear brakes become effective. It is undesirable to make heavy initial reductions at low speed. The objection is mainly due to the high brake shoe friction at low speed, and to the more rapid application of the head than the rear brakes, which latter occurs under all conditions with long trains but is less if the train is equipped with K triples.

(Page 32)

Draft rigging in fair to good condition is not pushed in nor pulled out. It is either driven in or jerked out, both implying a severe blow. The severity cannot be judged by any shock felt by those riding trains, particularly the engineer of a heavy locomotive. For a shock to be felt the speed must change suddenly and considerably. The amount of the instant reduction in speed or jerk of a modern freight locomotive that is necessary to cause a break-in-two is too

little to be felt as the severe shock that it is to draft rigging.

The secret of smooth train handling lies in ability to control the slack, in how to prevent it from running in or out harshly. Where so controlled no draft gear in fair to good condition will be damaged. Slack action cannot be prevented, but by enginemen acquiring knowledge of the various causes for it and exercising forethought in the use of steam, train brakes, independent engine brakes and sand, it can generally be controlled, even to the extent of avoiding further injury to damaged draft gear. The heavier the locomotive and the longer the train the greater is the care required. In train handling harsh running out of slack is the usual trouble.

[fol. 5933]

Sheet 7 of 8 sheets

Instructions for Enginemen (Page 33)

Where a long train has just been started, and while the engine is working heavily, if steam is shut off suddenly and a heavy service application is made at once there is liability of driving in couplers or damaging weak cars near or ahead of the middle of the train.

When slack runs in or out rapidly one part of the train gradually attains a lower speed than the other and the shock is the result of the draft rigging having to suddenly make the speed uniform on the instant the slack is all in or out. How heavy the shock will be depends mainly on the difference in speed that must instantly be made uniform and on the weight that must suddenly be altered in speed. Weight is important, but change in speed is more so as changing it suddenly 3 m.p.h. will cause nine times more shock than will a similar quick change of 1 m.p.h.

Charging and Testing (Page 35)

Do not assume that the presence of "K" triple valves will permit of releasing long trains at low speeds. Also, do not assume that the holding power that can be retained on the engine will alone permit of this. It is a help; but has its limitations.

Short Cycle Method of Grade Braking (Page 43)

This method of braking will have to be employed when controlling trains with air alone on descending grades,

because it is the only method by which the auxiliaries can be kept charged as near the maximum as possible, the braking power and wheel heat be most uniformly distributed and developed, and most uniform speed maintained. While the short cycle method is easy to master, it differs radically from the methods practiced by engineers who have learned mountain grade braking with hand brake assistance, the principal difference being more frequent brake applications and short holds.

Engineman's Brake Practice (Page 44)

No fixed rule can be made to cover the amount of reduction that should be made during each application, as different trains hold differently, but the engineman can determine by the result of the first few applications about how much brake power will be required to produce the desired result. Speaking generally the brakes should be [fol. 5934] applied each time the auxiliaries are recharged,

Sheet 8 of 8 sheets

Engineman's Brake Practice (Page 44)

and released as soon as the speed begins to reduce from the effect of the brake application. Where at all possible the interval between applications should not exceed 1 to 1 1/4 minutes, and this time should be divided as follows: 20 to 30 seconds applying and holding the brakes on, 20 to 25 seconds in release position, then move the brake valve to running position to allow the pressure to equalize throughout the train and in about 10 or 15 seconds again place the brake valve in release for a few seconds to "kick off" any triples that may have reapplied from overcharge; allow a few seconds for such triples to exhaust the brake cylinder pressure down to the value of the retainer, and make the next application. While the above will have to be varied for different trains, it will serve for a general idea of the short cycle method, and if the train is handling well no very great departure from the method suggested above will be necessary.

Overheated and Sliding Wheels. (Page 45)

While trains are in motion on descending grades trainmen must watch the wheels for signs of overheating or

sliding. If either is noticed, the retainer should be turned down—provided, however, that not more than two retainers are turned down in the portion of a train under the care of each trainman.

Trainmen should watch particularly for wheel sliding at low speed, and when starting the train from any stop while the retainers are turned up.

[fol. 5935] · PLAINTIFF'S EXHIBIT NO. 328

Admitted and Filed Apr. 16, 1941

Sheet 1 of 6 sheets

Excerpts from a Volume Entitled "Southern Pacific Company (Pacific Lines)—Air Brake Rules and Regulations—Governing Train Handling, Operation and Tests of Air Brake and Air Signal Apparatus—Effective February 1, 1939"

Train Handling Regulations (Page 8-9)

Smooth train handling depends on the ability to control the slack and how to prevent it from running in or out harshly. Where so controlled, no draft gear in fair to good condition will be damaged. Slack action cannot be prevented, but by acquiring knowledge of the various causes for it, and exercising forethought in the use of steam, train brakes, independent engine brake and sand, it can be controlled, even to the extent of avoiding further injury to damaged draft gear. The heavier the engine and the longer the train the greater is the care required.

When slack runs in or out one part of the train gradually attains a lower speed than the other and the shock is the result of draft gears having suddenly to make the speed uniform on the instant slack is all in or out. How heavy the shock will be depends mainly on the difference in speed that must instantly be made uniform and on the weight that must suddenly be altered in speed.

Excess pressure is the amount in pounds in the main reservoir over that in the brake pipe and auxiliary reservoirs and is required to charge brake system and release brakes. It is indicated by the difference between the hands on the air gage.

The nearer brakes are applied to full service, the more promptly will they commence to release. A light brake pipe

reduction results in less excess, and is more liable to be followed by brakes failing to release. Where made from standard pressure, a light reduction is also likely to be followed by overcharging in the attempt to insure release, and is more pronounced with longer trains.

With high pressures and large main reservoirs it is very easy to overcharge the head end of the train; many detrimen-

[fol. 5936]

Sheet 2 of 6 sheets

Train Handling Regulations

(Page 9)

tial effects result, such as stuck brakes, flat and broken wheels. Many are of the impression that because the brake pipe gage shows higher than the auxiliary reservoir pressure is intended to be, that all brakes are released; as a matter of fact, this is a condition that exists only on the first few cars in the train, the pressure at the rear not having sufficiently increased to release the brakes. In fact, 25 cars back from the engine it cannot be determined whether the brake valve handle is in release or running position. With a large capacity feed valve the brake valve handle should be held in release position not to exceed 25 seconds when releasing brakes only is the object. The exceptions to this rule are when charging the brake system and braking on grades under all conditions.

(Page 10).

Where high speeds are maintained with brakes applied, the wheel heat is generated faster than it can be radiated and increases until it is abnormal. When brakes are held applied for long distances, those that are holding well are called upon to do the braking and it might be possible that the brake cylinder pressure on such cars is gradually increased without making the other brakes effective if the brake pipe pressure is slowly raised and increased only a few pounds, and then reduced without recharging. Continuing this operation will cause the wheels on some cars to be overheated, while on others they will remain cold or nearly so.

(Page 11)

Where the brakes are used for controlling speed for short distances, the main consideration is to maintain a safe speed and ample pressure throughout the brake system for

stopping in a reasonable distance. The method of braking to provide this condition must be such that the majority of brakes shall be made to do their share of braking. When brake applications are prolonged from light reductions, the brakes having greater pressures develop wheel heat at a much faster rate than others, thus contributing to cracked plates and broken wheels.

An automatic brake application will cause the brake pipe pressure to reduce faster at the head end of train than at rear. This results in the head brakes applying in advance of those at the rear, and tends to bunch the train and compress the draft gears. In releasing, the head brakes commence so much before those at the rear that, as far as holding power is concerned, they are practically off before the rear ones start to release, causing the slack to run out rapidly. Just how serious the results may be largely depends on how heavily they are applied, the amount the draft gears are compressed, and how slowly the train is

[fol. 5937]

Sheet 3 of 6 sheets

Train Handling Regulations

(Pages 11-12)

moving. The latter is very important because the rapid increase in holding power at low speed, which is almost sure to break the train in two unless there is retained at the head end some powerful brake, such as retaining valves or independent brake on the engine.

The engine brake may be used to good advantage if the time necessary to gently run the slack in or out is used. This is also true when switching.

When retaining valves are used, it is practicable to release at somewhat lower speeds than when not used. While the head brakes always start to release before those at the rear, the retaining valves cause a much slower fall of brake cylinder pressure, the result being that slack runs out more gradually.

Draft gears in fair to good condition are not pushed in nor pulled out. They are either driven in or jerked out, both implying a severe shock. The severity cannot always be judged by engineers, particularly if on a heavy engine. For a shock to be felt the speed must be changed suddenly and considerably. The amount of the instant reduction in

speed or jerk of a large engine that is necessary to cause a break-in-two is too little to be felt.

The critical time in regard to train damage from brake applications is while the slack is running in or out, as trains are not pulled in two, or buckled from steady pulling or pushing strains; therefore, if the slack can be kept stretched or bunched, the liability of train damage from brake valve manipulation will be greatly reduced. This condition is most nearly obtained by applying the train brakes far enough away to complete the stop without making a heavy reduction.

A method that may be used to advantage is to keep the slack stretched by making a light initial reduction, then closing throttle to a drifting position and keeping engine brake released. The object in working steam is to keep the slack from running in as the brake application is made, thus preventing severe jerks due to slack running out as the rear brakes become effective. It is undesirable to make a heavy initial reduction at low speed, due to the high brake shoe friction and to the mere rapid application of the head brakes than those at the rear.

When make-up of train or grade conditions are such that

[fol. 5938]

Sheet 4 of 6 sheets.

Train Handling Regulations

(Page 13, 16 and 17.)

they would have a tendency to bunch the slack, the brakes should be operated with slack bunched. When such tendency would be to stretch the slack, the brakes should be operated with the slack stretched.

At how low speeds brakes can be released without liability of damage depends on how heavily they are applied, the amount of main reservoir pressure, the length of train, whether slack is in or out, lightly or heavily, and on whether track conditions (sags, humps, and curves) favor releasing. Engineers must exercise judgment in this, but taking all chances on the side of stopping.

Some of the most important facts relating to heavy grade braking may be summed up as follows:

- (1) The brake work required for a stop increases much more rapidly than the speed.

- (2) On level track the braking power is available for stopping.
- (3) On a descending grade a certain portion of the braking power is required to prevent an increase in speed.
- (4) On a descending grade the work required of each brake to maintain uniform speed increases with the weight of the load per operative brake.
- (5) The braking power available for stopping is that in excess of what is necessary to prevent an increase in speed.
- (6) The braking power obtained from a certain brake shoe pressure always increases as the speed reduces.
- (7) The longer the distance required for a stop, the more will it be lengthened by brake cylinder leakage.

Another very important factor and one which cannot be determined by the ordinary brake test, is the condition of triple valve feed grooves. If any are considerably choked with dirt, a longer time will be required to recharge their reservoirs, the train will be more difficult to control and will require greater care. For this reason, extreme care and low speed should be observed on beginning the descent.

Where conditions are similar, the ability to obtain the maximum braking power possible is dependent on brake system being charged to standard pressure, and the proper use of same.

[fol. 5939]

Sheet 5 of 9 Sheets

Train Handling Regulations (Pages 17, 18-19)

While it is desired to accomplish a given amount of work with the least possible consumption of air, train safety is of the greatest importance; therefore, the speed of compressor should not be retarded at the expense of safety.

Although a standing brake test with knowledge of M per operative brake and number of cars is necessary be

fore starting, the ability to control or stop a train must be, for the sake of safety, confirmed by the first running application after passing the summit. Speed should be kept low until this is determined and later increased accordingly.

Where conditions are not favorable speed should be reduced, or if necessary, train stopped.

When using sand for the purpose of preventing wheel sliding at or near the completion of stop, it should not be started running until after the brakes are applied, to prevent sand getting between shoes and wheels. Sand once started should be continued until the train stops or brakes are finally released. Failure to accomplish this is liable to cause rather than prevent wheel sliding, as when once sliding, sand will not start them revolving but will rapidly cause large flat spots. In case of emergency, sand should be started as soon as possible.

When starting with 2 or more engines ahead, the second engineer should allow lead engineer to start the train if possible, or to almost stall before aiding him. Starting together will cause a severe shock if any slack is in.

With one or more helper engines back in the train, helper engineers must be the first to use steam in starting. The lead engineer should be prepared to start promptly and carefully before the helpers become stalled. If train cannot be so started, lead engineer should take slack back to lead helper. Then, if necessary, rear helper engineer will take slack, and lead engineer will keep the throttle open but be prepared to ease off temporarily to prevent a lunge while starting. All slacking must be done carefully.

Slipping of drivers should be avoided, as it causes severe shocks to draft gears and damage to machinery and rails. The draft springs cause the slack to change quickly, and this is usually followed by a severe shock with the renewed use of steam. Hence, when slipping is probable, sand should be used and no more throttle than necessary. The beginning of slipping will instantly reduce the steam pressure in the cylinders, and the quick and slight closing of the throttle will at once "steady" the engine without much change of slack or loss of speed. With 2 or more engines in a train, excessive slipping of one will often cause the others to slip.

Release while Running (Page 36)

Where a light application is made, it should be increased as much as practical before attempting to release. It may be necessary at times to release after a slow-down without increasing the application, but this should be avoided as far as practicable.

Air brakes on trains of 100 or more cars must not be released until train stops, except that when all cars are equipped with "AB" brakes, they may be released at speeds above 20 miles per hour.

Air brakes on trains of 75 to 100 cars must not be released until train stops unless brakes are operated with the slack stretched and speed is not below 20 miles per hour; or all cars are equipped with "AB" brakes and speed is not below 15 miles per hour.

Air brakes on trains of 50 to 75 cars must not be released at any speed below 15 miles per hour.

When retaining valves are used on trains of any length, air brakes may be released at any speed above 8 miles per hour.

After brakes are released, while running, additional steam must not be used until it is known that the slack has had time to adjust itself, and even then it must gradually be increased.

(Page 36)

The required number must be turned up solid on head end of train before beginning descent and left until train has descended the grade, except that retaining valves must be turned down on cars having overheated wheels, and an equal number turned up on other cars.

Plaintiff's Exhibit No. 334 (Witness Hardwicke)
Apr. 17, 1941

HIGHWAY GRADE CROSSING ACCIDENTS
where auto involved. Table 24
I.C.C. Accident Bulletin

ARIZONA

NEW MEXICO
1929-1939 inclusive

NEVADA

Year	Acci- dents	Casual- ties	Autos Regis- tered.	Acci- dents	Casual- ties	Autos Regis- tered	Acci- dents	Casual- ties	Autos Regis- tered.
1929	17	23	109,013	20	48	78,374	4	5	31,915
1930	19	31	110,525	12	46	84,150	4	6	29,645
1931	11	23	105,572	10	21	81,325	6	12	32,168
1932	7	8	94,947	13	23	76,767	7	9	31,830
1933	8	10	89,496	6	12	76,643	4	4	28,324
1934	6	10	95,586	7	10	82,900	3	4	32,230
1935	19	28	103,122	12	19	92,457	6	12	34,858
1936	13	20	115,035	11	24	108,729	7	8	38,509
1937	9	14	129,210	15	20	118,106	3	3	40,655
1938	16	25	128,791	12	21	116,537	3	5	36,424
1939	12	23	131,355	9	20	120,441	2	2	40,771
137	215	1,213,652	127	264	1,036,429	49	70	379,329	
Accidents per 10,000 regis- tered autos 1.12				Accidents per 10,000 registered autos 1.22			Accidents per 10,000 registered autos 1.25		

Apr. 17, 1941

HIGHWAY GRADE CROSSING ACCIDENTS
Table 24 - Interstate Commerce Commission.
Accident Bulletin

ARIZONA

NEW MEXICO
1929-1939 inclusive

NEVADA

Year	Acci- dents	Casual- ties.	Autos Regis- tered.	Acci- dents.	Casual- ties.	Autos Regis- tered.	Acci- dents.	Casual- ties.	Autos Regis- tered.
1929	19	20	109,013	24	58	78,374	5	6	31,915
1930	20	33	110,525	14	48	84,150	5	7	29,645
1931	14	26	105,572	10	21	81,325	6	12	32,168
1932	8	9	94,947	16	26	76,767	7	9	31,830
1933	10	12	89,496	7	13	76,643	4	4	28,324
1934	7	11	96,586	7	10	82,900	4	5	32,230
1935	20	29	103,122	13	19	92,457	7	13	34,858
1936	13	20	115,035	11	24	108,729	10	11	38,509
1937	9	14	129,210	15	20	118,106	4	4	40,655
1938	16	25	128,791	13	22	116,537	5	7	38,424
1939	14	25	131,355	10	21	120,441	4	4	40,771
180	225	1,213,652		140	278	1,036,429	61	82	379,329
Accidents per 10,000 regis- tered auto's 1.23				Accidents per 10,000 registered auto's 1.35			Accidents per 10,000 registered auto's 1.6		

Plaintiff's Exhibit No. 336 (Witness Hardwicke)
Apr. 17, 1941

SUPERIOR COURT, PIMA COUNTY, ARIZONA
State vs. Southern Pacific Company
No. 20087

Plaintiff's Ex. No. 336 Witness

Grade crossing accidents classified as to trains striking
autos and autos running into trains. I.C.C. Accident
Bulletin Table 50 - Years 1935 - 1939 inclusive.

Struck by train

1935	-	2434
1936	-	2680
1937	-	2816
1938	-	2270
1939	-	2229

Ran into side of train

1381
1441
1515
1108
1123

Plaintiff's Exhibit No. 337 (Witness Hardwicke)
Apr. 17, 1941

~~CASUALTIES~~ CASUALTIES TO NON-TRESPASSERS
Table 51

Interstate Commerce Commission
ACCIDENT BULLETINS.

	ARIZONA			NEVADA		
	Killed	Injured	Total Casualties	Killed	Injured	Total Casualties
1929	9	179	188	3	44	47
1930	16	141	157	7	33	40
1931	15	107	122	3	35	38
1932	5	63	68	2	31	33
1933	8	61	69	1	22	23
1934	6	71	77	7	28	35
1935	12	98	110	2	32	34
1936	11	99	110	9	36	45
1937	6	128	134	2	46	48
1938	7	81	88	9	53	62
#1939	7	230	237	*25	65	90

includes 140 injured in accident on Santa Fe, Grand Canyon Line.

* includes 23 killed, 30 injured in derailment at Harney, Nevada.

(Form T reports on file Arizona and Nevada)

Plaintiff's Exhibit No. 338 (Witness Hardwicke)

Apr. 17, 1941

SOUTHERN PACIFIC COMPANY
PACIFIC LINESCASUALTIES TO EMPLOYEES IN TRAIN AND TRAIN SERVICE ACCIDENTS
FREIGHT SERVICE IN THE STATE OF NEW MEXICO

Year 1930

DATE	LOCATION	TRAIN NO.	NO CARS IN TRAIN	SPEED M.P.H.	DAYS DISAB.	CLASS PERSON	NAME OF PERSON	ICC CLASS	DESCRIPTION OF ACCIDENT
1/7	Corona, N.M.	3/227	59	4	All	C	P.E. Russell	S-J	*Abrupt stop and slack action of train
2/1	Esccondido, N.M.	232	47	Stand- ing	P 40	B	C.E. Roe	S-D	Racket dey missing on hand brake
2/15	Hongola, N.M.	Ex 3318 E	70	30	A 7	B	Roy C East	S-J	*Broken air pipe
3/27	Palomas, N.M.	2/226	18	20	P 7	F	H.W. Beasley	S-C	Jumped from engine and fell, after super heater flue had broken
3/27	Desert, N.M.	1/229	70	Stand- ing	P-5	B	H. W. Van Stone	S-J	Stepped on piece of slag
4-28	VeVay, N.M.	Ex 3324 W	99	25	None P 7	C B	W.H. Prickett H.F. Province	S-J S-J	*Air hose bursted (Bruised L.Shld) (Badly sprained L. wrist)
5/5	Corona, N.M.	203	57	Stand- ing	A-8	B	R.C. East W.E. Grumbles	S-J S-J)Bruised about L. hip Post fell on foot
6/13	Alamagordo, N.M.	201	29	Stand- ing	A-5	F	W.C. Roswell	S-C	Poppet valve on stoker opened
8/9	High Rolls, N.M.	213	18	8	P-30	B	Spencer Gates	S-G	Foot slipped on ground
12/24	Luna, N.M.	Ex.3657	70	7	P 20	C	R.R. Sale	S-J	Deraillment caused by train striking hatch cover on track

YEAR 1931

1/14	Deming N.M.	Ex 366W	100	10	A-14	E	M.E. Shemeley	S-C	Struck back of finger on some object
2/21	Hargis, N.M.	2/226	60	12	P-20	B	Wm. Gebo	S-G	Claims stepped in hole getting off train-sprain

Sheet 2 of 7 sheets

DATE	LOCATION	TRAIN NO.	No. Cars IN TRAIN	SPEED M.P.H.	DAYS DISAB.	CLASS PERSON	NAME OF PERSON S.W.	ICC CLASS	Description of Accident
4/5	Vaughn, N.M.	Ex 3655W	70	6	P-45	B	S.W. Van Stone	S-J	*Desired emergency of train brakes
4/23	El Paso - Ice House N.M.	2/410	100	15	A-18	B	H.R. Provence	S-J	*Slack running in on train, badly bruised and sprained
6/7	Alamagordo, N.M.	Ex 3653W	91	Stndg	A-15	F	G.W. Boswell	S-C	Particles of foreign matter in eye.
6/16	Carne, N.M.	2/426	68	40	A9	E	A.F. Leifaste	S-C	Claims got hot cinder in eye
6/26	Rodeo, N.M.	Ex 5005W	70	15	P30	C	H.E. Gilvin	S-J	*Service application caused run in on rear of train, fracturing ribs
7/14	Lordsburg, N.M.	412	0	6	A10	F	FC Ollerton	S-J	Struck hand on reverse lever
7/5	Elwood, N.M.	Ex 3655W	70	6	A4	B	C.E. Roe	S-J	Slipped on slag and sprained leg
9/4	Animas, N.M.	8	21	Stndg	A16	B	W.C. Archer	S-J	Piece of ice slipped bruising right ankle
12/12	Gage, N.M.	Ex 3317W	102	10	P21	B	R.C. Carden	S-J	*Air burst on moving car, bruises of shoulder, leg and back
<u>YEAR 1932</u>									
1/26	Mills, N.M.	X3415-E	8	3	P90	C	B.G. Haire	S-J	Brakeman cut cars, moving head cut just as cond. stepped over
5/19	Arena, N.M.	X5029W	58	Stndg	P15	F	S.B. Warner	S-J	Foot slipped on head block of switch
5/31	Temporal, N.M.	X3307W	100	25	P30	BK	R.E. Hoffman	S-J	*Air hose blew off car, fracturing and breaking ribs.
7/6	Oscura, N.M.	X3657W	70	5	P24	CD	C.C. Whittington	S-J	Stumbled on top of car, fell off
8/26	Alamagordo, N.M.	E3304-W	88	15	P10	BK	F.E. Hedrick	S-J	Hot cinder in right eye
10/4	Lordsburg, N.M.	980	62	6	P30	CD	W.H. Prickett	S-G	Rough coupling of cabooses

Sheet 3 of 7 sheets

DATE	LOCATION	TRAIN NO.	NO CARS IN TRAIN	SPEED M.P.H.	DAYS DISAB.	CLASS PERSON	NAME OF PERSON	ICC CLASS	DESCRIPTION OF ACCIDENT
12/22	Aften, N.M.	1-982	69	40	A7	F	Clyde B Hilton	S-C	Cinder flew in eye
12/28	Deming, N.M.	X3655W	100	Stdg	P15	BR	Fred R. Hughes	S-G	Slipped on ice covered ladder on water car
10/30	Lizard, N.M.	994	47	40	A6	BK	J. Mousier	S-J	Cinder in eye
12/22	Carrizozo, N.M.	X2507E	3	Stdg	A8	BK	W.J. Loughrey	S-G	Fell getting off water car
12/6	Polkey, N.M.	X3694W	100	20	P21	CD	A.M. Hardin	S-J	*Train broke in two-derailed
12/17	Hachita, N.M.	X5019W	96	15	P60	BK	J.S. McCranie	S-J	*Fell from train when slack ran in
<u>YEAR 1934</u>									
3/22	Unknown	Ex3714W	100	Unknown	P8	F	V.I. Springer	S-C	Grain of sand in eye
5/22	Paxton, N.M.	Ex3659W	104	38	P10	C	S. Gates	S-J	*Air hose separated from coupling
6/24	Aften, N.M.	1/982	70	10	P14	B	J.W. Ralley	S-G	Stepped on piece of ballast- sprained right knee
7/1	Newman, N.M.	994	58	35	A7	E	J.D. Richardson	S-J	Cinder in eye
8/12	Cuervo, N.M.	EX3716W	17	Stdg	P14	B	C.N. Lemon	S-J	Falling between cars in stand- ing train
9/3	Orogrande, N.M.	970	1	5	P20	B	O.L. Pruitt	S-J	Stepped on square edge of tie, sprained ankle
9/3	Hawkins, N.M.	Ex3655W	66	4	A13	B	A.A. Dean	S-J	Lost footing and fell running for caboose
9/6	Vaughn, N.M.	994	55	8	P180	C	S.G. Allen	S-J	Lost hold on side ladder of car falling to ground
10/13	Cuervo, N.M.	Ex3655W	32	Stdg	P7	C	J.M. Justus	S-D	Lost hold on brake wheel while letting off brake
10/3	Alamagordo, N.M.	992	47	5	A5	B	G.J. Dingwall	S-J	Foreign object in eye
10/17	"	" 970	2	6	A5	B	C.B. McNeil	S-J	Hot sand in eye
10/21	Deming, N.M.	1/980	92	4	P14	C	R.C. Carden	S-J	*Lost hand hold on ladder of car when slack run out

DATE	LOCATION	TRAIN NO.	NO. CARS IN TRAIN	SPEED M.P.H.	DAYS HSAB.	CLASS PERS
12/1	Carrizozo, N.M.	Ex3657W	48	2	A14	F
12/28	Tularoso, N.M.	992	36	Stndg	A-4	C
3/26	Carrizozo, N.M.	Ex3656W	0	1	<u>YEAR 1935</u> P45	B
3/2	Tucumcari, N.M.	Yd3403	10	3	P10	C
3/12	Afton, N.M.	X5047W	100	30	A4	CD
4/10	Newman, N.M.	990	57	Stndg	A4	F
4/17	Vevay, N.M.	X5010W	35	35	P21	BK
6/9	Salinas, N.M.	X3694W	42	40	A4	F
6/14	Sefar, N.M.	X5023W	100	8	A5	BK
6/25	Orogrande, N.M.	X3716W	48	5	P15	BK
7/1	North, N.M.	1-992	48	Stndg	P10	F
7/15	Vevay, N.M.	X3695W	101	30	P30	E
11/12	Tucumcari, N.M.	Yd3424	6	4	A8	BK
11/13	Deming, N.M.	X3687W	67	Stndg	A7	BK
1/13	Lordsburg, N.M.	X5030W	66	8	<u>YEAR 1936</u> A7	BK
2/23	Alamogordo, N.M.	X3691W	36	Stndg	P14	E
2/1	Coyote, N.M.	X3692W	67	6	A9	BK

Sheet 4 of 7 sheets

NAME OF PERSON	ICC CLASS	DESCRIPTION OF ACCIDENT
Jack Adams	S-J	Hot cinder in eye
A.L. Walker	S-J	Lost hold on side ladder of car falling to ground
J.W. Vickery	S-A	Hand slipped while attempting to adjust coupler on caboose
E.S. Raggsdill	S-J	Lost balance and fell from car when coupling of cars was made
Chas. Lewis	S-J	*Bursted hose emergency stop, thrown to floor of caboose
R.O. Barginbolt	S-C	Hook slipped off water spout fell to ground
C.E. Hudson	S-J	*Emergency stop of train, broken train line, thrown to floor of caboose
T.J. Gorman	S-J	Opened blow off cock and foreign object struck left eye
G.O. Brookmiller	S-J	*Action of train caused jar of caboose struck head against window frame
L.J. Flebig	S-J	*Sudden stop, lost balance and fell against caboose window
T.J. Gorman	S-C	Hand caught in stoker
E.R. Layman	S-C	Flue burst, burned by steam and water
F.C. Sears	S-J	Lost balance and fell while being switched
John Folkers	S-J	Fell from platform of stock chute, injured shoulder
C.W. Adams	S-G	Lost footing and fell
J.B. Perkins	S-C	Hand caught in stoker
R.J. Woods	S-J	Stepped on rock or in hole

DATE	LOCATION	TRAIN NO.	NO. CARS IN TRAIN	SPEED M.P.H.	DAYS DISAB.	CLASS PERSON	NAME OF PERSON	CLASS	DESCRIPTION OF ACCIDENT
<u>YEAR 1936 Cont-</u>									
3/9	Deming, N.M.	X5003W	102	4	P10	BK	J.D. Gomillion	S-G	Stepped on slag while detraining
4/10	Vaughn, N.M.	992	54	Stndg	P20	BK	C.H. Strass	S-G	Slipped from ladder of car
4/18	Oscara, N.M.	X3699W	41	25	P45	BK	J.L. Thompson	S-J	Fell from gangway of engine
5/28	Wooten, N.M.	X2511E	28	Stndg	P30	F	R.G. Skinner	S-J	Caught between cab and water spout
6/16	Ancho, N.M.	X3714W	69	12	P30	C	Geo Ramsdale	S-G	Lost hold fell from caboose
6/16	Vaughn, N.M.	X3655W	65	Stndg	P20	F	L.W. Rolands	S-C	Fell in man hole, burned by hot compound
6/17	Alamagordo, N.M.	X3692W	100	15	P30	BK	P.L. Weosh	S-J	*Lost balance and fell from train
7/18	Hachita, N.M.	X3653W	50	2	P20	BK	L.L. Barker	S-D	Lost hand hold, fell from top of car while coupling
8/2	Alamagordo, N.M.	2-992	57	10	A7	C	A.M. Hardin	S-G	Stepped on something while detraining
10/13	Anapra, N.M.	X5011W	19	Stndg	C9	BK	E.L. Crowe	S-J	Struck by tie plate falling from car
10/23	Aden, N.M.	3-980	70	4	A5	BK	F.E. Pierce	S-J	Foreign object in eye
<u>YEAR 1937</u>									
1/29	Simmons, N.M.	990	53	12	P15	B	R.R. Griggs	S-J	Lost balance and jumped from running board of engine
3/19	Lordsburg, N.M.	Ex5004W	65	10	A5	C	J.J. McMahon	S-G	Claims stepped on rock covered with oil, sprained left groin
4/29	Ancho, N.M.	1/992	46	Stndg	P10	C	Wm. Gebro	S-J	Permitted finger to be caught between hatch cover and plug of a P.F.E. car
5/14	Lordsburg, N.M.	2/980	70	6	P26	B	R.B. Miller	S-D	Lost balance and fell from car when coupling was made
6/30	Mongolo, N.M.	EX4360W	100	25	2-21	B	C.E. Hudson	S-J	*Air applied in emergency
					2-21	B	V.L. Fountaine	S-J	resulting in sudden stop, throw- ing brakeman to floor of caboose
7/4	Gallinas, N.M.	Ex 3655W	70	5	1-14	C	F.B. Potts	S-J	*Reduction in speed of train, thrown to floor of caboose
7/7	Anapra, N.M.	Ex5000W	65	10	1-13	B	C.L. Mathews	S-J	*Standing in caboose lost balance when reducing speed, sprained back

DATE	LOCATION	TRAIN NO.	NO CARS IN TRAIN	SPEED M.P.H.	DAYS DISAB.	CLASS PERSON
------	----------	-----------	---------------------	-----------------	----------------	-----------------

7/15	Lordsburg, N.M.	2/984	58	Stdg	1-9	C
------	-----------------	-------	----	------	-----	---

8/6	Polly, N.M.	996	44	15	1-4	F
-----	-------------	-----	----	----	-----	---

12/6	Cloudcroft, N.M.	970	4	7	A 7	B
------	------------------	-----	---	---	-----	---

YEAR 1938

5/1	Santa Rosa, N.M.	990	41	Stdng	A7	F
-----	------------------	-----	----	-------	----	---

5/2	Three Rivers, N.M.	EX3691W	66	35	A5	B
-----	--------------------	---------	----	----	----	---

6/9	Lordsburg, N.M.	2/984	66	2	A4	B
-----	-----------------	-------	----	---	----	---

6/25	Hongola, N.M.	1/982	69	4	A4	B
------	---------------	-------	----	---	----	---

6/22	Deming, N.M.	2/980	60	Stdng	P30	C
------	--------------	-------	----	-------	-----	---

8/26	Roy, N.M.	974	16	Stdng	P42	B
------	-----------	-----	----	-------	-----	---

10/12	Victorio, N.M.	EX5001E	29	35	A4	B
-------	----------------	---------	----	----	----	---

11/12	Rodeo, N.M.	EX5009W	46	Stdng	P7	B
-------	-------------	---------	----	-------	----	---

YEAR 1939

1/19	Deming, N.M.	980	70	Stdng	P10	E
------	--------------	-----	----	-------	-----	---

2/12	Steins, N.M.	EX5003W	66	4	A7	B
------	--------------	---------	----	---	----	---

2/2	Montoya, N.M.	EX3702	70	Stdng	A6	B
-----	---------------	--------	----	-------	----	---

Sheet 6 of 7 sheets

NAME OF PERSON	ICC CLASS	DESCRIPTION OF ACCIDENT
L.F. Abbott	S-J	Foreign object lodged in eye
J.A. Handy	S-J	Foreign object striking eye
C.L. Pruitt	S-J	Brakeman jarred from running board of tank car, falling to ground when car derailed
C.A. Heath	S-C	Slipped and fell on locomotive tender
C.C. Ward	S-J	Foreign object lodged in right eye
R.E. Harmon	S-G	Stepped on piece of slag ballast and sprained ankle
R.S. New	S-G	Stepped on rock and sprained right ankle
L.A. Fail	S-J	Vent plug struck hernia in right groin
B.W. Higginbotham	S-J	Lost balance and fell, fracture of right hand
Geo M. Donegan	S-J	Foreign object lodged in right eye
Walter E. Robinson	S-J	Box of freight slipped from hands
E.R. Layman	S-G	While descending from locomotive slipped and fell
S.M. Stinson	S-J	Foot slipped while running, ankle sprained
Roy J. Woods	S-J	Stepped on rock ankle sprained

Sheet 7 of 7 sheets

DATE	LOCATION	TRAIN NO	NO CARS IN TRAIN	SPEED M.P.H.	DAYS DISAB.	CLASS PERSON	NAME OF PERSON	ICC CLASS	DESCRIPTION OF ACCIDENT
6/16	Steins N.M.	EX3616W	Helper	2	Per.	F	J.A. Dowdy	S-2	Engine backing up struck and run over fireman
6/7	Vaughn, N.M.	1/996	47	15	P10	C	W.P. Dolan	S-J	Lost balance and fell when descending from cupola of caboose
6/15	Rio Grande, N.M.	990	58	Stndg	A4	F	R.S. Peterson	S-J	Ash pan hopper door sticking momentarily.
9/26	Chappel, N.M.	4/980	59	35	A5	F	Wm.M. Clark	S-C	Foreign object lodged in eye
10/18	Tulurose, N.M.	Ex3656W	67	3	A13	C	L.J. Benson	S-J	Lost balance and fell

* Slack action

Plaintiff's Exhibit No. 339



To all to Whom these Presents shall Come, Greeting.

WILLIS G. ETHEL

I, ~~WILLIAM~~ STEPHENSON, SECRETARY OF THE ARIZONA CORPORATION
COMMISSION. DO HEREBY CERTIFY THAT the annexed is a true and complete trans-
cript of the

≈ ACCIDENT REPORT - SHEET NO. 28 ≈

≈ OF THE ≈

≈ ATCHINSON, TOPEKA AND SANTA FE RAILWAY COMPANY ≈

≈ OF THE ≈

≈ ACCIDENT OCCURRING ON ITS ALBUQUERQUE DIVISION NEAR THE ≈

≈ STATION OF COCONINO ON JULY 27th, 1939 ≈

To all to Whom these Presents shall Come, Greeting:

WILLIS G. ETHEL

I, ~~Willis G. Ethel~~ **WILL STERNHORN**, SECRETARY OF THE ARIZONA CORPORATION

COMMISSION, DO HEREBY CERTIFY THAT the annexed is a true and complete transcript of the

ACCIDENT REPORT - SHEET NO. 28

OF THE

ATCHINSON, TOPEKA AND SANTA FE RAILWAY COMPANY

OF THE

ACCIDENT OCCURRING ON ITS ALBUQUERQUE DIVISION NEAR THE

STATION OF COCONINO ON JULY 27th, 1939

Which was filed in the office of the said Arizona Corporation Commission as provided in Paragraph 701, Revised Statutes of 1928.

IN WITNESS WHEREOF, I HAVE HEREUNTO

SET MY HAND AND AFFIXED THE OFFICIAL SEAL

OF THE ARIZONA CORPORATION COMMISSION, AT

THE CAPITOL, IN THE CITY OF PHOENIX, THIS 21st

DAY OF March, 1941

A. D.

Willis G. Ethel
SECRETARY

Willis G. Ethel
ASSISTANT SECRETARY

5952

MONTHLY REPORT OF RAILWAY ACCIDENTS

ARIZONA CORPORATION COMMISSION

FORM No. 123

SHEET No. 28

Name of reporting Carrier (1) The Atchinson, Topeka & Santa Fe Ry. Co.

Const Lines

For the month of July, 1939

If "joint operation," or crossing collision, name roads involved (2)

If "joint operation," name road whose Superintendent is in charge of track (3)

Carrier's number (4)

84415

Carrier's division (5)

Albuquerque

Date of

accident (6)

27th

Time of

day (7)

8:17 PM

ICC

Class

D-5

Place of accident (9)

Arizona

station (10)

Coconino

Nearest

milepost (11)

57

Estimated distance and direction from station named (12)

.51 Mi east

Kind of accident (13)

Derailement

Clear, cloudy or foggy? (14)

Clear

Raining or snowing? (15)

No.

Daylight

or dark? (16)

Dark

Cause (briefly) (17) Excessive speed on curve, resulting in derailement two engines and four passenger cars.

Kind of train (18)

Passenger

No. (18A)

Over

flow

extra

Number of cars in train (18B)

13

Engine Nos. (19)

3853

3704

Direction (20)

West

Speed (21)

35 to 40

m. p. h.

(22) Method of operation

(Answers to questions 21 and 22 required only in connection with collisions.)

(23) Number of main tracks

(24) DETAILS OF CASUALTIES TO PERSONS

Name and address of person

Class of person

Killed or nature and extent of injuries

Days disability. (If killed, so state)

Actual (d)

Probable (e)

(See Attached List)

NAME OF ROAD		(a) Equipment	(b) Way and Structures	(c) Clearing Wreck	(d) Total
The AT & SF RY. CO-CL		\$ 46,000.00	\$ 900.00	\$ 4,801.74	\$ 51,701.74
(25) COST					
TOTAL		46,000.00	900.00	4,801.74	51,701.74

(26) Detail of cause, nature, and circumstances of accident; responsibility and experience of employees responsible; estimate

Kind or accident (13) Derailment Clear, cloudy or foggy? (14) Clear Raining or snowing? (15) No. Daylight or dark? (16) Dark
 Cause (briefly) (17) Excessive speed on curve, resulting in derailment two engines and four passenger cars.
 Kind of train (18) Passenger train No. (18A) Over flow extra Number of cars in train (18B) 13 Engine Nos. (19) 3853 3704 Direction (20) West Speed (21) 35 to 40 m.p.h.
 (22) Method of operation (23) Number of main tracks
 (Answers to questions 21 and 22 required only in connection with collisions.)

(24) DETAILS OF CASUALTIES TO PERSONS

Name and address of person	Class of person	Killed or nature and extent of injuries	Days disability, (if known, so state) Actual (d) Probable (e)
(See Attached List)			

NAME OF ROAD	(a) Equipment	(b) Way and Structures	(c) Clearing Wreck	(d) Total
The AT & SF RY. CO-CL	46,000.00	900.00	4,801.74	51,701.74
(25) COST				
TOTAL	46,000.00	900.00	4,801.74	51,701.74

(26) Detail of cause, nature, and circumstances of accident; responsibility and experience of employees responsible; estimate and description of damage to railway property. (With regard to collisions involving any question of train orders, it should be stated whether a "19" order or a "31" order was used.)

Overflow Extra Passenger train, when running 35 to 40 miles per hour, derailed engines 3853 and 3704, combination car No. 2547 and tourist sleepers Nos. 4070, 4260 and 4267, due to excessive speed on 10 degree 4 minute curve, lead engine 3853, causing heavy stress on 90 pound rail, Santa Fe standard section, rolled by Colorado Fuel and Iron Company in 1912, relaid in curve No. 92 on Grand Canyon District 1928 - no defects. Accident due to negligence of Engineman B. H. Sparks. Experience 26 years as locomotive engineer and 3 years as

(Signature) Robt. Irwin

(Title) General Claim Agent

(SEE INSTRUCTIONS ON REVERSE OF SHEET)

(SPACE BELOW AVAILABLE FOR RETURNS)

~~Union Pacific~~ fireman, with this company; 3 years as fireman for Union Pacific

Estimated damage	Engine 3853	\$ 9,000.00
	Engine 3704	13,000.00
	Comb. Car 2547	7,000.00
	Tourist Sleeper No. 4070	12,000.00
	" " " 4260	3,000.00
	" " " 4267	2,000.00
	Track	900.00
	Winslow Wrecker-Labor Supplies	1,876.00
	Needles Wrecker-Labor Supplies	1,329.74
	Work train switching	1,596.00
	Total	\$ 51,701.74

INSTRUCTIONS REGARDING ENTRIES ON FACE OF THIS SHEET

This report must be rendered monthly to the ARIZONA CORPORATION COMMISSION, Phoenix, Arizona. Accidents resulting in loss of life must be reported by telegraph, at the earliest possible moment.

1. The significant words in the name of the reporting carrier should be given in full, so far as practicable.
- 2 and 3. Concerning train accidents occurring on terminal or other track operated jointly or in common, or classifiable as crossing collisions, give full details as to responsibility.
4. Enter the number of the accident as recorded in the carrier's operating records.
5. Enter the name of the operating division on which the accident occurred.
6. State the day of the month.
7. State the time o'clock in hours and minutes, a.m. or p.m.
8. Enter a capital letter to indicate the class and a small letter to indicate the subclass.
10. Give the name of the station nearest to the place where the accident occurred (or was first discovered) and indicate whether it occurred on main track, or on yard track or sidings. This information should be given both for train accidents and train-service accidents. Main tracks within yards are not to be regarded as yard tracks. Sidings not used exclusively as passing tracks are to be regarded as yards.
11. The giving of the number of the milepost nearest to the place of the accident is optional; and instead of giving it in the case of either a train or a train-service accident, if the accident occurred at a station, that fact should be stated, or, if it occurred within a yard, the name or description of the yard should be given.
12. Distance, estimated in miles or rods, should be given when appropriate.

Needles, Wrecker-Labor Supplies
Work train switching

1,000.00
1,329.74
1,596.00

Total

\$ 51,701.74

INSTRUCTIONS REGARDING ENTRIES ON FACE OF THIS SHEET

This report must be rendered monthly to the ARIZONA CORPORATION COMMISSION, Phoenix, Arizona.

Accidents resulting in loss of life must be reported by telegraph, at the earliest possible moment.

1. The significant words in the name of the reporting carrier should be given in full, so far as practicable.
- 2 and 3. Concerning train accidents occurring on terminal or other track operated jointly or in common, or classifiable as crossing collisions, give full details as to responsibility.
4. Enter the number of the accident as recorded in the carrier's operating records.
5. Enter the name of the operating division on which the accident occurred.
6. State the day of the month.
7. State the time o'clock in hours and minutes, a.m. or p.m.
8. Enter a capital letter to indicate the class and a small letter to indicate the subclass.
10. Give the name of the station nearest to the place where the accident occurred (or was first discovered) and indicate whether it occurred on main track, or on yard track or sidings. This information should be given both for train accidents and train-service accidents. Main tracks within yards are not to be regarded as yard tracks. Sidings not used exclusively as passing tracks are to be regarded as yards.
11. The giving of the number of the milepost nearest to the place of the accident is optional; and instead of giving it in the case of either a train or a train-service accident, if the accident occurred at a station, that fact should be stated, or, if it occurred within a yard, the name or description of the yard should be given.
12. Distance, estimated in miles or rods, should be given when appropriate.
18. Show the kind of train, as freight, passenger, mixed, special, official, pay, work, switching, etc. If light engine, state to what class of service assigned.
20. Give the time-table direction.
21. Give the estimated speed in miles per hour.
22. In case of a collision, show whether trains were operated under a block system at point of accident, stating specifically what method of blocking, if any, was employed.
23. Give number of main tracks in use in locality of accident.
25. State the amount of damage to equipment (including damage to foreign cars), to other railway property, and cost of clearing wreck, with the total amount as provided. In case of a "joint-operation" accident, figures for the several items should be given for each road involved, the name of which should be clearly indicated. If no other road is involved, respondent may make the requisite entries on "Total" line only.
26. If the space afforded on this form is insufficient for all the requisite entries concerning a particular accident, blank sheets of like size, suitably identified and completed, may be attached to a single Form 195 containing the introductory details applicable to the accident as a whole.

[fol. 5955]

Name and Address (a)	Class of person (b)	Extent of injuries (c)	Days Disability
Aisla White Kalamazoo, Mich.	C-1 (a)	Lacerations right knee Left ankle & right shoulder dislocated	P-21
Michael Sachs Newark, N. J.	C-1 (a)	Eye and chest injuries possible fractured ribs	P-21
G. B. Parker Scarborough, England	C-1 (a)	Fractured ribs	P-14
Minnie Hafemeister Milwaukee, Wis.	C-1 (a)	Dislocated right shoulder Lacerations left ear and back	P-14
Lillian Aston Akron, Ohio	C-1 (a)	Shoulder cut and shock	P-14
G. H. Knight Oak Park, Ill.	C-1 (a)	Neck injury and lacerations of head and leg	P-7
Cora Fisher Long Prairie, Minn.	C-1 (a)	Bruised right hand and shoulder	P-5
Frances Columbo Detroit, Mich.	C-1 (a)	Bruised about face, lacerated Jaw	P-5
Bernice Thompson Indianapolis, Ind.	C-1 (a)	Knee cap bruised, cut on left leg	P-5
Alice Srock Detroit, Mich.	C-1 (a)	Body bruises and shoulder sprained	P-4
Jennie Hatch Ann Harbor, Mich.	C-1 (a)	Body bruises and cut over eye	P-4
P. B. Gillenwater Glasgow, Ky.	C-1 (a)	Bruised arm and legs	P-10
Dorothy Friedrick, Hobart, Ind.	C-1 (a)	Sprained back, pelvis and forehead bruised	P-10
Nevada McGann, Minneapolis, Minn.	C-1 (a)	Right leg and arm bruised	P-5
Carolyn Station Oak Park, Ill.	C-1 (a)	Lacerations right elbow and forehead bruised	P-10
[fol. 5956] Ethel Stephenson, Chicago, Ill.	C-1 (a)	Forehead and right hand cut, also bruises	P-5
Katherine Vietler Kenosha, Wis.	C-1 (a)	Back and chest bruises	P-15
Helen McLane Litchfield, Minn.	C-1 (a)	Lacerations left hand, hip and leg bruises	P-21

Name and Address (a)	Class of person (b)	Extent of injuries (c)	Days Disability
Hilda Hansen Litchfield, Minn.	C-1 (a)	Head and back injuries and multiple bruises	P-14
Hazel Anderson Lexington, Ky.	C-1 (a)	Bruised left arm and hip	P-2
Mrs. R. T. Anderson, Lexington, Ky.	C-1 (a)	Bruised leg and elbow	P-2
Wm. F. Belmer Cincinnati, Ohio	C-1 (a)	Minor bruises and shock	P-2
Mrs. Wm. F. Belmer Cincinnati, Ohio	C-1 (a)	Minor bruises and shock	P-2
Marion E. Deputy Glenolden, Penn.	C-1 (a)	Bruises and nervous shock	P-2
G. A. Feareisen Minneapolis, Minn.	C-1 (a)	Body Bruises and nervous shock	P-2
Lucille Feiereisen Minneapolis, Minn.	C-1 (a)	Body bruises and nervous shock	P-10
Louise Glardon, Chicago, Illinois	C-1 (a)	Back, left side and knee cap injured	P-7
Frank Guyon Detroit, Mich.	C-1 (a)	Bruised head, shock and sore back	P-10
Angela Guyon Detroit, Mich.	C-1 (a)	Bruised about spine back and neck	P-7
Mary Henry Tampa, Florida	C-1 (a)	Left arm sprained and bruised, back injury	P-21,
Esther Hoge Milwaukee, Wis.	C-1 (a)	Thigh bruised, right and left legs bruised	P-14
Isabella Heuppert, Detroit, Mich.	C-1 (a)	Body bruises and shock	P-3
[fol. 5957]			
Arthur L. Jones Three Rivers, Mich.	C-1 (a)	Left arm and hip bruised, shock	P-5
Helen Kaye, Cleveland, Ohio	C-1 (a)	Bumped head and nervous shock	P-3
Margaret C. Kelley, Washington, D. C.	C-1 (a)	Bruised elbow and hips	P-5
Mrs. G. W. Koenigkramer Cincinnati, Ohio.	C-1 (a)	Bruised shoulder	P-2
Janet Koenigkramer Cincinnati, Ohio	C-1 (a)	Cut chin and bruised shoulder	P-4
A. W. Light Cincinnati, Ohio	C-1 (a)	Both legs bruised and neck strained	P-5

Name and Address (a)	Class of person (b)	Extent of injuries (c)	Days Disability
Virginia Light Cincinnati, Ohio	C-1 (a)	Nerve shock, neck, elbow and hip bruised	P-5
John L. Light Cincinnati, Ohio	C-1 (a)	Head and neck bruised, nervous shock	P-7
John McCloskey, Jr. Philadelphia, Penn.	C-1 (a)	Body bruises	P-5
Marie B. McCloskey Philadelphia, Penn.	C-1 (a)	Body bruises	P-4
Marie E. Matz Hudson Hts., N. J.	C-1 (a)	Bruised left thigh, right leg and shock	P-5
R. Metcalf Pittsburg, Penn.	C-1 (a)	Bruised head	P-3
John A. Metcalf Pittsburg, Penn.	C-1 (a)	Right shoulder, forearm, left elbow, bruised and back injured	P-10
W. Niemar Paul, Minn.	C-1 (a)	Left hand, fingers and wrist injured	P-3
Francis J. O'Brien Savanna, Ga.	C-1 (a)	Head injury and body bruises	P-15
Netta O'Brien Philadelphia, Penn.	C-1 (a)	Body bruises and shock	P-5
Anna E. Paist, Philadelphia, Penn.	C-1 (a)	Lacerations back of head and nerve shock	P-4
Anna K. Paist Philadelphia, Penn.	C-1 (a)	Laceration left leg below knee, Nerve shock	P-7
[5958] J. Pearson Savara Falls, N. Y.	C-1 (a)	Sprained neck and back, shock	P-5
R. J. Pearson Savara Falls, N. Y.	C-1 (a)	Head and kidney injuries, shock	P-20
E. Peck Pittsburg, Penn.	C-1 (a)	Left shin bruised, shock	P-3
Anna Pelosi, Louis, Mo.	C-1 (a)	Back injury	P-14
Margaret L. Rohrer Pittston, Penn.	C-1 (a)	Bruised head	P-5
Margaret Rohrer (minor) Pittston, Penn.	C-1 (a)	Abrasion of elbow, brush burns	P-2
Samuel Saunier Savara, N. J.	C-1 (a)	Head and neck bruised, shock	P-5
E. Schner Savara, Ohio	C-1 (a)	Shock, neck wrenched and stiffness	P-7

Name and Address (a)	Class of person (b)	Extent of injuries (c)	Days Disability
Hilda Schaefer Akron, Ohio.	C-1 (a)	Bruised arms, neck, sore, shock	P-10
H. E. Schlitz Canton, Ohio	C-1 (a)	Neck and back sprained	P-5
Winifred Schlitz Canton, Ohio	C-1 (a)	Left leg, neck and back sprained	P-5
K. A. Wells, Oak Park, Ill.	C-1 (a)	Wrenched back	P-2
Henrietta Wurtzsmith Detroit, Mich.	C-1 (a)	Elbows bruised	P-3
Mrs. E. K. Yoder Cleveland, Ohio	C-1 (a)	Bruised elbows and shock	P-10
Sophia Zuelfke Milwaukee, Wis.	C-1 (a)	Legs bruised from hip to ankle	P-10
Betty Miller Clinton Hill, N. Y.	C-1 (a)	Cuts and bruises about body	P-3
Virginia Cronin Chicago, Ill.	C-1 (a)	Head bruised and neck strained	P-3
Laura Duggan Milwaukee, Wis.	C-1 (a)	Back knee and right shoulder bruised	P-3
[fol. 3959]			
Maude B. Duncan, St. Johns, Mich.	C-1 (a)	Legs, Hips and wrist bruised and sprained	P-10
Lydia Edling Minneapolis, Minn.	C-1 (a)	Knees and arms bruised	P-3
Geo. S. Foster Decatur, Ill.	C-1 (a)	Shoulder bruised	P-3
Ward B. Garret South Bend, Ind.	C-1 (a)	Bruised head over left eye and wrenched shoulder	P-7
Paul Hatchet Glasgow, Ky.	C-1 (a)	Head cut and shoulder bruised	P-5
William Hoge Milwaukee, Wis.	C-1 (a)	Lacerations and bruises right arm and both thighs	P-3
Marie Larpenteur Minneapolis, Minn.	C-1 (a)	Body bruises and shock	P-3
Carl C. McKee Avilla, Ind.	C-1 (a)	Left shoulder bruised	P-2
Emma Metzger Philadelphia, Penn.	C-1 (a)	Side strained and nervous shock	P-3
Emma Murmane Minneapolis, Minn.	C-1 (a)	Severe Shock	P-3
A. C. Pobloske Chicago, Ill.	C-1 (a)	Head bruised and side strained	P-3

Name and Address (a)	Class of person (b)	Extent of injuries (c)	Days Disability
Clara Schwaiger Kenosha, Wis.	C-1 (a)	Body bruises	P-2
Jenny Duffy Clinton Hill, N. Y.	C-1 (a)	Cuts and bruises about body	P-2
E. T. Shuttleworth Philadelphia, Pa.	C-1 (a)	Bruised chin, knee and shin	P-2
Mrs. Oscar Sieben Chicago, Ill.	C-1 (a)	Both arms, back and shoulders bruised and lacerated	P-21
Oscar W. Sieben Chicago, Ill.	C-1 (a)	Bruised legs, thighs and back	P-10
Martha Tillman Chicago, Ill.	C-1 (a)	Body bruises	P-2
Essalie Schopp White Plains, N. Y. [Id. 5960]	C-1 (a)	Sprained shoulders and back	P-3
Mary E. Seitz Glen Rock, Penn.	C-1 (a)	Contusion left arm, sprained neck	P-2
Elen B. Knight Oak Park, Ill.	C-1 (a)	Badly sprained neck	P-5
Bernice Carver Columbia, Ind.	C-1 (a)	Sprained shoulder	P-2
Fern W. Hammer Columbia, Ind.	C-1 (a)	Sprained neck	P-2
Mrs. W. W. Sotherland Toledo, Ohio	C-1 (a)	Bruised knees	P-2
Helen M. Kelly Chicago, Ill.	C-1 (a)	Nervous shock	P-2
Lucille Rapp Chicago, Ill.	C-1 (a)	Nervous shock	P-2
Christine M. Pack Mt. Lebanon, Penn.	C-1 (a)	Bruised legs	P-5
Lawrence Buckingham Washington, D. C.	C-1 (a)	Nervous shock	P-2
Mrs. Mae Jones Free Rivers, Mich.	C-1 (a)	Bruised left hand and nerve shock	P-4
Beverly Jones Free Rivers, Mich.	C-1 (a)	Shaken up and nervous shock	P-3
L. M. Fox Portland, Mich.	C-1 (a)	Sprained hands and back	P-4
Sam Zuelke Milwaukee, Wis.	C-1 (a)	Shaken up and nerve shock	P-3
Chas. E. Caswell Frederick, W. Va.	C-1 (a)	Bruised left shoulder, strained back and right shoulder	P-5

Name and Address (a)	Class of person (b)	Extent of injuries (c)	Diseases
C. M. Sherbourne Pawtucket, R. I.	C-1 (a)	Back and neck wrenched	P
Mrs. J. H. Geiger Baltimore, Md.	C-1 (a)	Head injuries	P
Irene Fedor Chicago, Ill.	C-1 (a)	Bruised back, pelvic bone, left arms and shoulders and legs	P
Agnes L. West Chestwood, N. Y.	C-1 (a)	Knees cut	P
[fol. 5961]			
Marie Eitman Muscatine, Iowa	C-1 (a)	Scraped and bruised legs	P
Lenora Eitman Muscatine, Iowa	C-1 (a)	Bruise under left eye and abrasions of knees	P
Madelina P. Metzger Philadelphia, Penn.	C-1 (a)	Abrasions about legs, contusions on hips and shoulders	P
Paul A. Metzger Philadelphia, Penn.	C-1 (a)	Abrasions forehead and left leg, contusions to shoulder and left knee	P
Amy Magnell Detroit, Mich.	C-1 (a)	Hand cut and elbow bruised	I
Elizabeth Lowber Dover, Del.	C-1 (a)	Various scratches and bruises	I
Katherine Glardon Chicago, Ill.	C-1 (a)	Bruised and sprained back and right lower side, left arm and shoulder	I
Dorothy Glardon Chicago, Ill.	C-1 (a)	Bruised leg and chest	I
James R. Wilson Edgewood, Penn.	C-1 (a)	Back injury and bruises on arms and legs	I
Gertrude Wilson Edgewood, Penn.	C-1 (a)	Bruises on legs and left ankle sprained	I
Elizabeth Sherbourne Pawtucket, R. I.	C-1 (a)	Bruise on right thigh and right arm	I
Ruth Caswell Wheeling, W. Va.	C-1 (a)	Wrenched back and side strained	I
[fol. 5962]			
Adolph Bollen Chicago, Ill.	A-96	Head bruised and back strained	I
B. T. Turner Chicago, Ill.	A-97	Lumbar spine injuries	I
W. W. Watkins Chicago, Ill.	A-97	Sprained back	I
A. A. Wohlgemuth Chicago, Ill.	A-95	Right hip bruised	I

Name and Address (a)	Class of person (b)	Extent of injuries (c)	Days Disability
Joseph Amherd Chicago, Ill.	A-96	Right knee, left arm bruised, kidney injuries	P-10
Mike Allen Maywood, Ill.	A-96	Bruised arms and ribs, burns on head and neck	P-5
F. J. Pustelnik Chicago, Ill.	A-96	Right shoulder, hip and head bruised	P-3
Wm. King Chicago, Ill.	A-97	Shaken up and body bruises	P-2
Jewel Adams Chicago, Ill.	A-97	Shaken up and body bruises	P-2
Elmer Ridley Chicago, Ill.	A-97	Shaken up and body bruises	P-2
C. N. Houston Chicago, Ill.	A-97	Shaken up and body bruises	P-2
J. C. Carter, Jr. Chicago, Ill.	A-97	Shaken up and body bruises	P-2
Wm. McPherson Chicago, Ill.	A-101	Shaken up, shock and bruises	P-2
[Vol. 5963]			
Robert J. Smith Chicago, Ill. Pullman Porter	D-a	Possible fracture right hand	P-30
P. Thompson Chicago, Ill. Pullman Porter	D-a	Nose and face bruised	P-2
Arthur Burton Chicago, Ill. Pullman Porter	D-a	Back wrenched	P-10
Emmet Eddings Chicago, Ill. Pullman Porter	D-a	Right leg bruised below knee	P-3
A. Simonson Chicago, Ill. Pullman porter	D-a	Spine and back injury	P-15
W. E. Brown Pullman porter Chicago, Ill.	D-a	Head and face bruised	P-3
W. V. Cardwell Chicago, Ill. Pullman Porter	D-a	Bruised about head and body, also right foot bruised	P-5
C. S. Smith Chicago, Ill. Pullman porter	D-a	Bruises and sprained back	P-3
Andrew L. Martin Chicago, Ill. Pullman porter	D-a	Sprained arm and shoulder	P-10

3482

Name and Address (a)	Class of person (b)	Extent of injuries (c)	Days Disability
[fol. 5964]			
William T. Weidinger Winslow, Arizona Road passenger brakeman	A-116	Strained back and lumbar muscles	P-14
Burton Sparks Winslow, Arizona Road passenger engineer	A-121	Body bruises and shock	P-10

(Here follow 4 photolithographs, side folios 5965-5978)

(Here follow 4 photolithographs, side folios 5965-5968)

Plaintiff's Exhibit No. 350

PRELIMINARY REVISED POPULATION ESTIMATES FOR CONTINENTAL UNITED STATES, TERRITORIES AND POSSESSIONS, STATES, AND CITIES OF 100,000 OR MORE: 1930-1939

Preliminary estimates of the population of continental United States, its Territories and possessions, States, and cities of 100,000 or more for the years 1930 to 1939 were announced today by Acting Director Vergil D. Reed of the Bureau of the Census, Department of Commerce. Some of these estimates represent revisions of estimates made before the taking of the 1940 Census. Final revised estimates cannot be computed until additional intercensal data are available, but the figures for continental United States and the Territories and possessions will probably be changed only very slightly.

In Table 1 is given the estimated population of continental United States for January 1 and July 1 of each year during the last intercensal period. The population increase in each six-month period and the distribution of that increase between natural increase and net migration from abroad are also presented, in addition to the annual increase. Starting with the census population of April 1, 1930, births and immigrants were added, and deaths and emigrants were subtracted, to produce successive estimates. Allowances were made for underregistration of births and deaths, and a final very slight adjustment was made to produce the exact 1940 census figure. Only the provisional character of the data on births and deaths for the first three months of 1940 prevents the estimates from being final.

The estimated population of States and of cities having 100,000 inhabitants or more at the Census of 1930 are presented for July 1 of each year from 1930 to 1939 in Tables 2 and 3. The basic method used

was linear interpolation between two census figures, that is, it was assumed that the amount of increase or decrease for a given area was the same for each intercensal year. Six States and twenty cities were covered by local censuses for one or more years between the Federal censuses (These States and cities are noted on the tables.) These local census figures were used as additional base points for linear interpolations. The difference between the sum of all the State estimates for any given year and the United States estimate described above was prorated among those States not having a special census. The adjustment factor never exceeded 0.3 percent for any year. After the tabulation of 1940 census data on each person's place of residence on April 1, 1935, and the completion of school statistics and other local series associated with population, final annual estimates that reflect the ebb and flow of population growth during the decade will be prepared.

The population of the Hawaiian Islands for July 1 of each year 1930 to 1939 was estimated on the basis of births, deaths, and migration, just as the population of continental United States was estimated. Estimates for the other Territories and possessions, which have less reliable vital statistics, were obtained by linear interpolation. (See Table 4.) The Census of Puerto Rico taken in 1935 by the Puerto Rico Reconstruction Administration was used in the same manner as were the State censuses.

The estimates are presented as computed, to the last digit (instead of being rounded), not because they are assumed to be accurate to the last unit, but for convenience in summation.

TABLE 1. ESTIMATED POPULATION OF CONTINENTAL UNITED STATES BY SIX MONTH PERIODS, JULY 1, 1930 TO JANUARY 1, 1940

(Estimates are preliminary)

Date	Estimated population	Net increase in preceding six months		Net increase in preceding six months		Gain or loss in preceding six months			Net migration
		Number	Percent	Number	Percent	Births	Deaths	Excess of births over deaths	
April 1, 1940 (census)	131,669,275	213,550	0.16	604,362	240,277	364,085	11,573
January 1, 1940	131,455,717	1,051,251	0.81	577,954	0.44	1,211,947	568,487	643,500	34,454
July 1, 1939	130,877,763	1,034,561	0.81	473,297	0.36	1,170,392	747,731	422,657	50,640
January 1, 1939	130,404,466	1,051,515	0.81	581,264	0.44	1,219,364	685,141	534,744	46,521
July 1, 1938	129,823,202	999,892	0.78	470,251	0.36	1,168,972	724,442	480,530	9,721
January 1, 1938	129,352,951	879,385	0.68	529,641	0.41	1,144,156	587,980	556,176	33,023
July 1, 1937	128,823,310	771,442	0.60	349,744	0.27	1,132,414	792,140	340,274	9,470
January 1, 1937	128,473,566	755,373	0.59	421,698	0.33	1,135,703	715,089	420,664	1,034
July 1, 1936	128,051,668	802,741	0.63	333,375	0.26	1,144,952	794,375	350,577	8,101
January 1, 1936	127,318,493	854,549	0.67	469,366	0.37	1,142,986	673,563	469,423	-57
July 1, 1935	127,249,127	376,250	0.29	365,183	0.30	1,123,216	747,612	375,604	9,579
January 1, 1935	126,863,944	853,294	0.68	491,067	0.39	1,174,251	679,456	494,795	-3,728
July 1, 1934	126,372,877	794,809	0.63	362,227	0.29	1,105,128	745,955	359,173	3,054
January 1, 1934	126,010,650	788,216	0.63	432,582	0.34	1,088,900	657,300	431,600	982
July 1, 1933	125,578,068	738,087	0.59	355,634	0.28	1,099,620	712,196	387,424	-31,790
January 1, 1933	125,222,434	747,284	0.60	382,453	0.31	1,143,592	663,901	479,691	-97,238
July 1, 1932	124,833,681	800,609	0.65	364,831	0.29	1,154,560	718,271	436,289	-71,458

continental United States and the territories and possessions will probably be changed only very slightly.

In Table 1 is given the estimated population of continental United States for January 1 and July 1 of each year during the last intercensal period. The population increase in each six-month period and the distribution of that increase between natural increase and net migration from abroad are also presented, in addition to the annual increase. Starting with the census population of April 1, 1930, births and immigrants were added, and deaths and emigrants were subtracted, to produce successive estimates. Allowances were made for underregistration of births and deaths, and a final very slight adjustment was made to produce the exact 1940 census figure. Only the provisional character of the data on births and deaths for the first three months of 1940 prevents the estimates from being final.

The estimated population of States and of cities having 10,000 inhabitants or more at the Census of 1930 are presented for July 1 of each year from 1930 to 1939 in Tables 2 and 3. The basic method used

United States estimate described above was projected among those States not having a special census. The adjustment factor never exceeded 0.3 percent for any year. After the tabulation of 1940 census data on each person's place of residence on April 1, 1935 and the compilation of school statistics and other local series associated with population, final annual estimates that reflect the ebb and flow of population growth during the decade will be prepared.

The population of the Hawaiian Islands for July 1 of each year 1930 to 1939 was estimated on the basis of births, deaths, and migration, just as the population of continental United States was estimated. Estimates for the other territories and possessions, which have less reliable vital statistics, were obtained by linear interpolation. (See Table 4.) The Census of Puerto Rico taken in 1935 by the Puerto Rico Reconstruction Administration was used in the same manner as were the State censuses.

The estimates are presented as computed, to the last digit (instead of being rounded), not because they are assumed to be accurate to the last unit, but for convenience in summation.

TABLE 1. ESTIMATED POPULATION OF CONTINENTAL UNITED STATES BY SIX MONTH PERIODS, JULY 1, 1930, TO JANUARY 1, 1940.

(Estimates are preliminary.)

Date	Estimated population	Net increase in preceding year		Net increase in preceding six months		Gain or loss in preceding six months			
		Number	Per cent	Number	Per cent	Births	Deaths	Excess of births over deaths	Net migration ¹
April 1, 1940 (census)	131,669,275	---	---	213,558	0.16	204,362	402,877	211,985	211,523
January 1, 1940	131,455,717	1,051,251	0.81	577,954	0.44	1,211,987	568,487	543,500	34,454
July 1, 1939	130,877,763	1,054,561	0.81	473,297	0.36	1,170,392	747,731	422,659	50,640
January 1, 1939	130,404,466	1,051,515	0.81	581,264	0.44	1,210,864	685,141	525,723	46,521
July 1, 1938	129,823,202	999,892	0.78	470,251	0.36	1,164,972	724,442	440,530	9,721
January 1, 1938	129,352,951	879,385	0.68	529,641	0.41	1,114,200	587,888	526,312	33,023
July 1, 1937	128,823,310	771,442	0.60	349,744	0.27	1,132,414	792,140	340,274	9,470
January 1, 1937	128,473,566	755,273	0.59	421,698	0.33	1,135,703	715,009	420,694	1,034
July 1, 1936	128,051,568	802,741	0.63	333,375	0.26	1,111,652	794,378	317,274	8,101
January 1, 1936	127,718,493	854,549	0.67	469,366	0.37	1,144,906	673,563	471,343	-57
July 1, 1935	127,349,127	876,250	0.69	365,183	0.30	1,123,213	747,612	375,601	9,579
January 1, 1935	126,863,944	853,294	0.68	491,367	0.39	1,174,251	679,456	494,795	-3,728
July 1, 1934	126,372,877	794,809	0.63	362,227	0.29	1,105,128	745,955	359,173	3,054
January 1, 1934	126,010,650	789,216	0.63	432,582	0.34	1,086,900	657,300	429,600	982
July 1, 1933	125,578,068	738,087	0.59	355,634	0.28	1,099,620	712,196	387,424	-31,790
January 1, 1933	125,222,434	747,284	0.60	382,453	0.31	1,143,582	665,901	477,681	-97,238
July 1, 1932	124,839,981	800,509	0.65	364,831	0.29	1,154,560	718,271	436,289	-71,458
January 1, 1932	124,475,150	832,248	0.67	435,778	0.35	1,170,963	645,931	525,032	-89,254
July 1, 1931	124,039,372	962,687	0.78	396,470	0.32	1,184,563	748,664	435,899	-39,209
January 1, 1931	123,642,902	---	---	566,217	0.46	1,218,809	673,120	545,689	20,526
July 1, 1930	123,076,685	---	---	301,639	0.25	614,905	360,802	254,103	47,536
April 1, 1930 (census)	122,775,046	---	---	---	---	---	---	---	---

¹ A minus sign (-) denotes net emigration.

² Three-month period.

TABLE 9. ESTIMATED POPULATION OF THE UNITED STATES BY DIVISION AND SEXES, JULY 1, 1920-JULY 1, 1960

(Estimates are preliminary)

[illegible]

South Atlantic	15,738,569	15,886,691	15,069,198	15,254,298	15,489,787	15,614,283	15,808,981	17,008,361	17,198,488	17,421,484	17,680,889	17,888,181
East South Central	9,887,814	9,919,889	10,086,897	10,114,180	10,184,888	10,381,817	10,870,487	10,444,879	10,818,818	10,808,884	10,798,880	10,778,888
West South Central	18,178,880	18,211,888	18,288,889	18,409,088	18,487,488	18,978,878	18,841,711	18,788,898	18,800,471	18,888,088	18,980,888	18,984,888
Mountain	8,701,739	8,716,888	8,788,889	8,818,811	8,884,880	8,888,818	8,948,869	8,988,888	8,988,888	8,988,888	8,988,888	8,988,888
Pacific	8,184,488	8,241,618	8,418,488	8,848,078	8,708,888	8,888,181	9,018,788	9,184,888	9,288,888	9,488,188	9,688,400	9,788,888
NEW ENGLAND:												
Maine	797,488	799,818	808,880	810,780	818,088	818,888	824,797	828,818	828,884	827,488	848,818	847,888
New Hampshire	488,888	488,488	488,888	478,881	478,888	477,180	478,778	481,788	488,887	488,887	488,888	481,884
Vermont	887,811	888,881	888,888	888,888	888,184	888,007	888,867	888,888	888,888	888,888	888,888	888,888
Rhode Island	4,848,414	4,848,848	4,878,871	4,877,888	4,818,888	4,848,847	4,847,884	4,841,148	4,848,888	4,888,117	4,888,888	4,818,781
Massachusetts	887,487	887,888	888,888	888,848	888,888	888,888	888,888	888,881	888,888	888,888	888,888	888,888
Connecticut	1,808,888	1,811,188	1,848,874	1,848,884	1,848,871	1,888,887	1,848,108	1,870,888	1,878,488	1,888,888	1,908,888	1,908,888
MIDDLE ATLANTIC:												
New York	18,888,884	18,888,879	18,788,880	18,888,108	18,800,488	18,888,888	18,878,888	18,148,871	18,818,818	18,888,888	18,404,710	18,478,148
New Jersey	4,041,884	4,048,888	4,087,888	4,078,841	4,087,188	4,088,184	4,108,888	4,118,811	4,121,087	4,124,888	4,148,881	4,148,888
Pennsylvania	9,881,880	9,848,884	9,888,878	9,717,889	9,788,888	9,788,888	9,787,881	9,800,108	9,810,888	9,840,881	9,884,419	9,800,180
EAST NORTH CENTRAL:												
Ohio	6,448,887	6,448,884	6,488,188	6,722,888	6,748,480	6,748,067	6,748,787	6,810,878	6,828,829	6,858,887	6,884,140	6,907,612
Indiana	3,238,808	3,248,488	3,271,887	3,288,780	3,308,874	3,324,101	3,348,887	3,357,088	3,370,480	3,380,488	3,411,640	3,427,788
Illinois	7,480,484	7,448,884	7,488,443	7,710,888	7,780,879	7,788,844	7,788,188	7,787,888	7,811,748	7,840,881	7,878,788	7,887,841
Michigan	4,848,888	4,888,870	4,788,880	4,788,880	4,718,410	4,681,880	4,718,811	4,687,878	4,648,148	4,688,818	4,718,880	4,718,880
Wisconsin	2,888,884	2,847,888	2,878,888	2,881,818	2,888,871	2,888,088	2,847,784	2,863,848	2,878,188	2,888,847	2,880,884	2,877,887
WEST NORTH CENTRAL:												
Minnesota	2,548,888	2,578,880	2,598,888	2,622,181	2,642,844	2,648,187	2,687,888	2,704,878	2,728,840	2,748,888	2,778,881	2,748,880
Iowa	2,470,888	2,478,888	2,488,884	2,488,884	2,487,841	2,508,481	2,510,888	2,518,888	2,518,884	2,528,888	2,531,788	2,531,888
Missouri	3,428,887	3,427,081	3,428,084	3,478,880	3,488,884	3,501,100	3,516,488	3,524,707	3,524,188	3,524,888	3,524,888	3,524,888
North Dakota	680,888	680,888	677,888	677,888	677,888	677,888	677,888	677,888	677,888	677,888	677,888	677,888
South Dakota	682,888	681,888	688,888	688,888	681,480	677,888	677,888	677,888	677,888	677,888	677,888	677,888
Nebraska	1,877,888	1,877,888	1,874,070	1,874,888	1,874,888	1,874,888	1,874,888	1,874,888	1,874,888	1,874,888	1,874,888	1,874,888
Kansas	1,880,888	1,848,888	1,818,408	1,811,078	1,824,881	1,828,709	1,843,712	1,828,088	1,817,884	1,827,088	1,827,488	1,827,088
SOUTH ATLANTIC:												
Delaware	238,880	238,888	248,880	248,880	247,880	250,721	253,523	255,977	258,888	261,887	264,844	264,888
Maryland	1,681,888	1,688,000	1,688,880	1,678,884	1,688,184	1,714,812	1,733,708	1,738,881	1,744,881	1,748,814	1,808,991	1,821,844
District of Columbia	488,888	481,788	510,334	527,880	548,104	562,634	580,848	597,088	613,674	621,444	648,888	663,071
Virginia	2,421,881	2,430,817	2,440,788	2,488,984	2,508,448	2,544,543	2,548,888	2,581,988	2,603,888	2,627,788	2,627,788	2,627,788
West Virginia	1,728,888	1,728,888	1,728,750	1,728,716	1,728,881	1,808,488	1,822,681	1,837,884	1,851,578	1,868,404	1,887,848	1,901,974
North Carolina	3,170,874	3,188,678	3,228,848	3,288,181	3,308,547	3,340,080	3,366,082	3,421,374	3,438,870	3,477,888	3,538,818	3,571,888
South Carolina	1,728,888	1,744,434	1,748,887	1,778,888	1,774,874	1,810,010	1,822,027	1,838,553	1,853,433	1,868,888	1,888,888	1,888,888
Georgia	2,808,884	2,818,888	2,848,704	2,848,888	2,848,783	2,804,884	2,822,988	2,843,843	2,859,772	2,888,812	2,908,881	2,923,723
Florida	1,448,811	1,478,111	1,508,718	1,530,318	1,587,917	1,548,519	1,588,123	1,678,500	1,724,877	1,798,254	1,823,881	1,897,414
EAST SOUTH CENTRAL:												
Kentucky	2,614,888	2,623,188	2,630,942	2,673,847	2,694,445	2,716,888	2,738,841	2,758,188	2,777,788	2,801,888	2,826,888	2,845,887
Tennessee	2,614,888	2,623,188	2,630,942	2,673,847	2,694,445	2,716,888	2,738,841	2,758,188	2,777,788	2,801,888	2,826,888	2,845,887
Alabama	2,644,888	2,658,780	2,677,134	2,698,888	2,711,730	2,727,888	2,748,888	2,763,151	2,777,888	2,794,792	2,817,781	2,832,881
Mississippi	2,009,881	2,018,880	2,037,811	2,044,889	2,070,027	2,086,942	2,104,889	2,118,714	2,122,681	2,150,848	2,169,818	2,183,798
WEST SOUTH CENTRAL:												
Arkansas	1,864,488	1,868,818	1,871,821	1,880,756	1,888,888	1,897,756	1,907,148	1,913,941	1,920,887	1,930,349	1,941,168	1,947,887
Louisiana	2,101,888	2,110,880	2,140,413	2,148,878	2,180,713	2,210,488	2,248,631	2,265,682	2,288,187	2,315,080	2,342,880	2,368,880
Oklahoma	2,898,040	2,897,088	2,898,841	2,888,879	2,888,888	2,874,884	2,868,871	2,858,863	2,849,167	2,843,889	2,839,878	2,834,434
Texas	5,884,715	5,848,744	5,918,154	5,978,116	6,027,148	6,084,884	6,143,644	6,193,988	6,242,880	6,293,687	6,344,888	6,414,884
MOUNTAIN:												
Montana	887,888	888,721	841,884	848,888	848,673	847,740	848,888	851,888	852,888	854,888	857,881	858,434
Idaho	448,088	447,881	458,888	464,210	471,612	478,707	487,878	494,870	502,188	510,884	518,881	524,878
Wyoming	228,568	228,433	228,888	231,687	234,162	236,631	239,139	241,319	243,439	245,089	247,713	248,742
Colorado	1,028,791	1,039,077	1,049,688	1,058,848	1,066,117	1,074,643	1,083,843	1,090,884	1,097,888	1,104,880	1,112,100	1,122,884
New Mexico	423,817	428,481	438,115	448,884	458,888	470,158	480,996	491,167	501,199	512,191	523,888	531,818
Arizona	438,878	437,687	444,788	451,088	457,081	463,888	469,708	475,414	480,998	487,887	494,884	499,881
Utah	507,647	509,447	514,404	518,758	522,572	528,710	530,980	534,484	537,798	542,888	546,818	550,810
Nevada	91,058	91,438	93,721	95,484	97,487	99,347	101,888	103,089	104,888	106,748	108,748	110,847
PACIFIC:												
Washington	1,548,888	1,548,874	1,588,478	1,604,478	1,622,422	1,639,873	1,654,878	1,671,818	1,688,044	1,703,888	1,722,880	1,738,191
Oregon	988,788	988,188	978,517	988,848	997,722	1,018,112	1,038,640	1,058,888	1,078,888	1,094,578	1,108,880	1,128,884
California	8,877,881	8,714,041	8,887,888	8,948,848	8,987,880	9,008,878	9,088,480	9,148,888	9,248,884	9,348,770	9,411,848	9,507,887

¹ Based partly on State census of January 1, 1930.

² Based partly on State census of January 1, 1930.

³ Based partly on F.I.R.A. census of February 14, 1930.

⁴ Based partly on State census of July 1, 1920.

⁵ Based partly on State censuses as of March 1, 1921 to 1929.

⁶ Based partly on State census of April 5, 1930.

TABLE 3. ESTIMATED POPULATION OF CITIES OF 100,000 OR MORE IN 1930, JULY 1, 1930 TO JULY 1, 1939
(Estimates are preliminary)

City	Estimated population as of July 1,--									
	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
Akron, Ohio	234,784	232,789	232,734	231,709	230,684	229,659	228,634	227,609	226,584	225,559
Albany, N. Y.	187,491	187,608	186,184	185,441	184,757	183,074	182,390	181,707	180,023	179,340
Atlanta, Ga.	271,164	274,368	277,548	280,741	283,933	287,125	290,317	293,509	296,702	299,894
Baltimore, Md.	806,830	811,652	817,073	822,497	827,920	833,343	838,765	844,188	849,610	855,033
Birmingham, Ala.	259,876	260,664	261,457	262,247	263,038	263,828	264,619	265,409	266,200	266,990
Boston, Mass.	762,110	760,800	759,489	758,179	756,868	755,557	754,247	752,931	751,616	750,301
Bridgport, Conn.	146,786	146,787	146,807	146,826	146,846	146,866	146,886	146,906	146,926	146,946
Buffalo, N. Y.	573,147	573,429	573,712	573,994	574,277	574,559	574,842	575,124	575,407	575,689
Cambridge, Mass.	113,624	114,809	115,742	116,675	117,608	117,560	118,019	118,468	118,917	119,366
Camden, N. J.	118,671	118,545	118,418	118,292	118,165	118,039	117,913	117,786	117,660	117,533
Canton, Ohio	104,993	105,343	105,692	106,042	106,391	106,741	107,090	107,440	107,789	108,139
Chattanooga, Tenn.	180,007	180,844	181,680	182,517	183,353	184,190	185,026	185,863	186,699	187,536
Chicago, Ill.	3,366,489	3,367,396	3,368,303	3,369,210	3,370,117	3,371,024	3,371,931	3,372,838	3,373,745	3,374,652
Cincinnati, Ohio	452,837	454,544	456,251	457,958	459,665	461,372	463,079	464,786	466,493	468,200
Cleveland, Ohio	599,877	597,947	596,017	594,087	592,157	590,227	588,297	586,367	584,437	582,507
Columbus, Ohio	290,952	292,804	294,657	296,509	298,361	300,214	302,066	303,918	305,770	307,623
Dallas, Texas	241,331	244,757	248,183	251,609	255,035	258,461	261,887	265,313	268,739	272,165
Dayton, Ohio	201,225	202,199	203,173	204,146	205,120	206,093	207,067	208,041	209,014	210,000
Denver, Colo.	288,725	292,180	295,635	299,090	302,545	306,000	309,455	312,910	316,365	319,820
Des Moines, Iowa	142,990	144,716	146,442	148,168	149,894	151,620	153,346	155,072	156,798	158,524
Detroit, Mich.	1,543,443	1,542,667	1,541,891	1,541,115	1,540,339	1,539,563	1,538,787	1,538,011	1,537,235	1,536,459
Duluth, Minn.	101,453	101,413	101,373	101,333	101,293	101,253	101,213	101,173	101,133	101,093
Elizabeth, N. J.	114,472	114,004	113,537	113,069	112,601	112,134	111,666	111,198	110,730	110,263
El Paso, Texas	102,381	101,780	101,179	100,578	100,000	99,422	98,844	98,266	97,688	97,110
Erie, Pa.	115,992	116,090	116,188	116,286	116,384	116,482	116,580	116,678	116,776	116,874
Evansville, Ind.	102,119	101,401	100,683	100,000	99,317	98,634	97,951	97,268	96,585	95,902
Fall River, Mass.	115,387	115,837	116,287	116,737	117,187	117,637	118,087	118,537	118,987	119,437
Flint, Mich.	155,810	153,082	150,354	147,627	144,899	142,171	139,443	136,715	133,987	131,259
Fort Wayne, Ind.	115,039	115,379	115,719	116,059	116,399	116,739	117,079	117,419	117,759	118,099
Fort Worth, Texas	143,802	146,224	148,646	151,068	153,490	155,912	158,334	160,756	163,178	165,600
Gary, Ind.	100,708	101,839	102,970	104,101	105,232	106,363	107,494	108,625	109,756	110,887
Grand Rapids, Mich.	168,077	168,019	167,961	167,903	167,845	167,787	167,729	167,671	167,613	167,555
Hartford, Conn.	184,127	184,346	184,564	184,782	185,000	185,218	185,436	185,654	185,872	186,090
Houston, Texas	294,654	303,872	313,090	322,308	331,526	340,744	349,962	359,180	368,398	377,616
Indianapolis, Ind.	364,731	367,012	369,293	371,574	373,855	376,136	378,417	380,698	382,979	385,260
Jacksonville, Fla.	130,381	133,708	137,035	140,362	143,689	147,016	150,343	153,670	157,000	160,327
Jersey City, N. J.	316,326	314,772	313,218	311,664	310,110	308,556	307,002	305,448	303,894	302,340
Kansas City, Kans.	121,624	120,751	120,300	120,850	121,400	121,950	122,500	123,050	123,600	124,150
Kansas City, Mo.	399,732	399,675	399,618	399,561	399,504	399,447	399,390	399,333	399,276	399,219
Knoxville, Tenn.	105,946	106,524	107,102	107,680	108,258	108,836	109,414	109,992	110,570	111,148
Long Beach, Calif.	142,368	144,812	147,256	149,700	152,144	154,588	157,032	159,476	161,920	164,364
Los Angeles, Calif.	1,244,704	1,271,357	1,297,990	1,324,623	1,351,256	1,377,889	1,404,522	1,431,155	1,457,788	1,484,421
Louisville, Ky.	308,088	306,161	304,234	302,307	300,380	298,453	296,526	294,599	292,672	290,745
Lowell, Mass.	100,228	100,802	101,376	101,950	102,524	103,098	103,672	104,246	104,820	105,394
Lynn, Mass.	104,244	101,948	101,642	101,336	101,030	100,724	100,418	100,112	99,806	99,500
Memphis, Tenn.	254,138	256,118	258,098	260,078	262,058	264,038	266,018	267,998	269,978	271,958
Miami, Fla.	111,461	114,859	118,257	121,655	125,053	128,451	131,849	135,247	138,645	142,043
Minneapolis, Minn.	578,480	579,402	580,324	581,246	582,168	583,090	584,012	584,934	585,856	586,778
Minneapolis, Wis.	445,056	447,856	450,656	453,456	456,256	459,056	461,856	464,656	467,456	470,256
Nashville, Tenn.	104,204	105,558	106,912	108,266	109,620	110,974	112,328	113,682	115,036	116,390
Newark, N. J.	442,023	440,785	439,547	438,309	437,071	435,833	434,595	433,357	432,119	430,881
New Bedford, Mass.	112,467	111,919	111,371	110,823	110,275	110,727	110,179	110,631	110,083	109,535
New Haven, Conn.	162,804	162,399	161,994	161,589	161,184	160,779	160,374	159,969	159,564	159,159
New Orleans, La.	459,656	463,234	466,812	470,390	473,968	477,546	481,124	484,702	488,280	491,858
New York, N. Y.	6,943,590	6,994,015	7,044,440	7,094,865	7,145,290	7,195,715	7,246,140	7,296,565	7,346,990	7,397,415
Norfolk, Va.	130,074	131,338	132,602	133,866	135,130	136,394	137,658	138,922	140,186	141,450
Oakland, Calif.	294,516	296,386	298,256	300,126	301,996	303,866	305,736	307,606	309,476	311,346
Oklahoma City, Okla.	140,685	147,756	154,827	161,898	168,969	176,040	183,111	190,182	197,253	204,324
Omaha, Nebr.	214,232	215,236	216,240	217,244	218,248	219,252	220,256	221,260	222,264	223,268
Paterson, N. J.	138,842	138,654	138,466	138,278	138,090	137,902	137,714	137,526	137,338	137,150
Peoria, Ill.	104,972	104,984	104,996	105,008	105,020	105,032	105,044	105,056	105,068	105,080
Philadelphia, Pa.	1,950,470	1,946,508	1,942,546	1,938,584	1,934,622	1,930,660	1,926,698	1,922,736	1,918,774	1,914,812
Pittsburgh, Pa.	669,863	670,047	670,231	670,415	670,600	670,784	670,968	671,152	671,337	671,521
Portland, Ore.	301,904	302,262	302,620	302,978	303,336	303,694	304,052	304,410	304,768	305,126
Providence, R. I.	252,547	250,813	249,079	247,345	245,611	243,877	242,143	240,409	238,675	236,941
Reading, Pa.	111,156	111,096	111,036	110,976	110,916	110,856	110,796	110,736	110,676	110,616
Richmond, Va.	163,182	164,193	165,204	166,215	167,226	168,237	169,248	170,259	171,270	172,281
Rochester, N. Y.	328,053	327,537	327,021	326,505	326,000	325,484	324,968	324,452	323,936	323,420
St. Louis, Mo.	821,812	821,221	820,630	820,039	819,448	818,857	818,266	817,675	817,084	816,493
St. Paul, Minn.	272,009	273,622	275,235	276,848	278,461	280,074	281,687	283,300	284,913	286,526
Salt Lake City, Utah	140,502	141,475	142,448	143,421	144,394	145,367	146,340	147,313	148,286	149,259
San Antonio, Texas	232,100	234,331	236,562	238,793	241,024	243,255	245,486	247,717	249,948	252,179
San Diego, Calif.	149,379	154,913	160,447	165,981	171,515	177,049	182,583	188,117	193,651	199,185
San Francisco, Calif.	634,398	634,412	634,426	634,440	634,454	634,468	634,482	634,496	634,510	634,524
Sarantons, Pa.	143,357	143,054	142,751	142,448	142,145	141,842	141,539	141,236	140,933	140,630
Seattle, Wash.	365,651	365,923	366,195	366,467	366,739	367,011	367,283	367,555	367,827	368,099
Springfield, Mass.	103,743	103,083	102,423	101,763	101,103	100,443	99,783	99,123	98,463	97,803
Springfield, Ill.	104,120	103,827	103,534	103,241	102,948	102,655	102,362	102,069	101,776	101,483

TABLE 4. ESTIMATED POPULATION OF TERRITORIES AND POSSESSIONS
OF THE UNITED STATES, JULY 1, 1930-JULY 1, 1939

(Estimates are preliminary)

Date	Alaska	American Samoa	Guam	Hawaii*	Panama Canal Zone	Philippine Islands	Puerto Rico ¹	Virgin Islands
April 1, 1940 (census)	² 73,186	12,908	22,290	423,330	51,827	³ 16,355,678	1,869,255	24,889
July 1, 1939	72,193	12,694	22,006	415,705	50,900	³ 16,142,453	1,844,034	24,673
July 1, 1938	70,868	12,409	21,628	409,960	49,664	15,858,154	1,810,406	24,386
July 1, 1937	69,544	12,123	21,250	400,816	48,428	15,573,854	1,776,778	24,098
July 1, 1936	68,219	11,838	20,872	396,072	47,192	15,289,554	1,743,150	23,810
July 1, 1935	66,894	11,553	20,494	389,362	45,956	15,005,255	1,710,327	23,522
July 1, 1934	65,570	11,268	20,116	384,331	44,720	14,720,955	1,678,629	23,235
July 1, 1933	64,245	10,982	19,738	383,973	43,484	14,436,655	1,646,931	22,947
July 1, 1932	62,921	10,697	19,360	385,013	42,248	14,152,355	1,615,233	22,659
July 1, 1931	61,596	10,412	18,982	377,530	41,012	13,868,056	1,583,535	22,372
July 1, 1930	60,271	10,126	18,604	367,880	39,776	13,583,756	1,551,838	22,084
April 1, 1930 (census)	⁴ 59,940	10,055	18,509	368,336	39,467	⁵ 13,512,681	1,543,913	22,012

* See fourth paragraph, page 1.

¹ Based partly on Puerto Rico Reconstruction Administration census of December 1, 1935.

² Estimate derived by extrapolation from the census figures for October 1, 1929 (59,278) and October 1, 1939 (72,524).

³ Estimate derived by extrapolation from the census figures for December 31, 1918 (10,314,310) and January 1, 1935 (16,000,303).

⁴ Estimate derived by interpolation between the census figures for 1929 and 1939.

⁵ Estimate derived by interpolation between the census figures for 1918 and 1939.

11044

Southern Pacific Company

Pacific Lines

Casualties to Employees

Los Angeles Division

Freight Service Train & Enginemen

Year 1930

Date	Location	Train No.	No. Cars in Train	MPH	Days Disab. Person	Class Person	Name of Person	ICC Class	Description of Accident
1/27	Niland, Cal.	X2451W	55	Unknown	P21	F	John Howe	S-C	Lost balance and fell off tender
1/4	Niland, Cal.	X278SE	15	Unknown	P45	B	Volney D. Richards	S-J	Brass fell on foot
1/28	Aurant, Cal.	X3737W	57	10	P21	B	Lon N. Davis	S-J	Caboose door closed on hand
2/10	Ventura, Cal.	X2713W	55	Unknown	A24	B	F. J. Koenig	S-J	Stumbled and fell while running from exploding gasoline
3/12	Vindale, Cal.	142	24	5	P45	B	Autie C. Haynie	S-A	Slipped on damp grass while running along side of train to cut off car
3/26	Redlands, Cal.	X1815W	5	5	P30	B	Frank E. Lillis	S-D	Thrown off balance when cut he was riding coupled into cars on main track
3/1	Mecca, Cal.	X5020W	79	8	A3	C	Frank H. Collins	S-J	Stepped on rock while running along side of train
3/3	El Centro, Cal.	X1619W	3	—	A21	B	Geo. T. Knox	S-J	While disconnecting brake rigging from derailed car, bar which he was using slipped
3/10	Heber, Cal.	X3757E	1	—	A6	B	Raymond K. Meyers	S-J	Ice chopper fell from car
4/26	Aurant, Cal.	X2813W	58	6	P45	C	Robert B. Cooper	S-H	Driverless truck and trailer rolled foul of track
[fol. 5970]									
5/31	Tustin, Cal.	X1809W	8	—	P21	B	Ambrose J. Bierman	S-D	Struck by flying air hose
5/13	Los Angeles, Cal.	X5046W	98	40	P45	B	Elmer T. Canutson	S-L	Undersired emergency, application of airbrakes
6/6	Alhambra, Cal.	Yd2659E	15	—	A8	C	M. S. JanDell	S-J	Burned by hot water and steam from bursted hose
					A16	F	Harry C. Schachleiter	S-C	

Date	Location	Train No.	No. Cars in Train	MPH	Days Disab.	Class Person	Name of Person	ICC Class	Description of Accident
7/6	El Centro, Cal.	Yd1683E	4	3	A5	C	Wm. H. Hausman	S-G	Stepped on nail
7/19	Indio, Cal.	X5002	123	3	A6	B	E. H. Rives	S-G	Stepped on rock while getting off moving car
7/1	El Centro, Cal.	Yd1711	2	0	A8	Yd-B	Lillo G. Hart	S-J	Piece of ice slipped and struck finger
8/14	Los Angeles, Cal.	128	89	25	A24	C	Frank Soutar	S-J	Thrown off balance by slack action on rear end
9/28	Los Angeles, Cal.	X5000W	86	6	P21	B	John W. Stephens	D-C	Weak car buckled
10/10	Indio, Cal.	X5024W	100	6	A7	B	Carl E. Butler	S-J	Undersired emergency applica- tion air brake caused severe slack action on rear end of train
11/17	Los Angeles, Cal.	X1803E	15	3	P30	B	Henry F. Thompson	S-H	Knocked down and run over by speeding auto which he at- tempted to flag
12/31	Oretega, Cal.	X2704W	64	—	P30	B	Hiland J. Wallin	S-D	Hand brake suddenly released after being set
[fol. 5971]									
1/3	Ventura, Cal.	Ex2719E	16	Unknown	A10	B	L. M. Miller	S-D	Struck by brake club when brake suddenly released
1/13	Pomona, Cal.	Ex2544E	16	—	A7	C	Henry C. Johnson	S-H	Struck by auto while crossing street
1/10	Bryn Mawr, Cal.	Ex5006W	99	18	A14	B	Harry F. Blake	S-J	Thrown off balance when train broke in two account trespasser stepping on cut lever
1/24	Niland, Cal.	Ex5026W	97	10	P30	B	Chas W. Jones	S-J	Undesired emergency of air brakes due to trespasser step- ping on cut lever
2/4	Beaumont, Cal.	Eng3678E	0	0	A4	F	Mark N. Gedds	S-C	Slipped and fell when climb- ing from tank of engine to cab
			43	12	A6	F	Paul S. Wolgamot	S-C	Burned by hot water from aquirt hose

	Ex 5021W	20	10	P45	B	DeForest Morgan	S-G	Caught feet between ends of ties while boarding ballast spreader
4/19	Flowing Well, Cal.	Ex5002W	125	30	B	Wm. H. Hausman	S-J	•Thrown off balance in caboose due to undesired emergency application
4/22	Imperial, Cal.	Ex3678W	27	0	C	Albert J. Murphy	S-J	Stepped on rock fracturing bone in foot
5/25	Niland, Cal.	Ex5020W	123	8	C	John P. McLaughlin	D-G	•Switch thrown under engine,
					B	Geo. B. Woodward	D-G	engine applying air in emer-
					B	Jno. B. Brown	D-G	gency causing severe slack ac-
						(SPEC. ATT.)		tion on rear end, buckling cars in middle of train
[fol. 5972]								
5/18	Raymer, Cal.	Ex2708W	97	0	F	E. B. Gaddy	S-C	Stepped backward and fell into culvert
6/19	Iris, Cal.	Ex5000W	178	35	F	Chas. A. Hunt	S-C	Hot water from squirt hose burned ankle
6/13	Imperial, Cal.	Ex5007W	86	4	B	Sam J. Rice	S-J	•Thrown off balance due to slack action account train parting
6/20	Los Angeles, Cal.	Ex3676W	99	10	B	Marion B. Godbold	S-J	•Thrown off balance due to slack action of train
6/28	Roscoe, Cal.	264	85	15	B	Geo. H. Brumage	S-J	•Thrown off balance and into ice bunker of car due to severe slack action
7/17	Tunel, Cal.	265	64	8	B	J. D. Cummins	S-J	Hands and feet burned from heat in tunnel
8/13	Los Angeles, Cal.	Ex2777E	61	6	C	James H. Weeks	C-D	•Cars rolled out of adjoining track sideswiping train causing derailment, injury caused from slack action
8/15	Santa Barbara, Cal.	Eng 3757	0	4	B	Jas. G. Wyatt	S-J	Stumbled and fell over switch stand
9/30	Chino, Cal.	Ex1810W	18	4	B	B. F. Rean	S-D	Struck by club account hand brakes suddenly releasing
10/1	Vindale, Cal.	Ex1625E	20	6	B	Chas. Self	S-G	Fell while boarding car

Date	Location	Train No.	No. Cars in Train	MPH	Days Disab.	Class Person	Name of Person	ICC Class	Description of Accident
11/27	Redlands, Cal.	Ex1810E	3	4	A9	B	A. C. Shackford	S-H	Auto collided with cut of cars
11/6	Santa Paula, Cal.	Ex2809W	2	0	A7	B	J. W. Higley	S-J	Cut by piece of wire when attempting to remove from hand hold of car
[fol. 5973]									
11/18	Ontario, Cal.	X254FW	52	4	A5	B	D. R. Stipp	S-J	Lost hold and fell off car account of slack action
11/21	Garnet, Cal.	270	52	8	A11	B	Geo. G. Hall	S-J	Struck by rock thrown by trespasser
12/29	Brawley, Cal.	X2557E	6	8	P30	B	Geo. R. Powers	S-J	Struck by open door on adjoining track
11/19	Colton, Cal.	X5035W	52	15	A4 A19	C B	John J. Breen John T. Curley	S-J	Sudden stop of train caused slack action and run in on rear of train throwing them off balance in caboose
12/25	Ventura, Cal.	1-812	74	10	A6	B	Lyle T. Sullivan	S-G	Claims fell while boarding caboose of moving train
12/14	Pomona, Cal.	828	24	8	P28	B	Charles H. Cox	S-H	Auto drove in front of train
12/14	Colton, Cal.	1-832	77	1	P60	E	Lewis H. White	S-1	Claims fell while running to board engine left foot severed
12/9	So. Fontana, Cal.	X5005W	77	30	P14	B	Ed Jennings	S-J	Emergency application air brakes caused by train parting
12/28	Calhoun, Cal.	83C	51	Standing	P14	B	John W. Clark	S-J	Claims slipped and fell off car in standing train.
Casualties to Freight Employees Year 1932									
2/16	Los Angeles, Cal.	X2741W	58	Not shown	A19	E	J. E. Connor	S-C	Slipped and fell as he stepped down from sand box to apron of engine
2/6	Los Angeles, Cal.	X2741W	74	6	A7	B	Wm. W. Lockwood	S-J	Particle of sand lodged in eye
2/24	Vindale, Cal.	X1619W	4	12	Killed	B	Arthur H. Davison	S-J	Apparently fell from moving

3/30	11/20, Cal.	X 30841	Name	2	Died	F	Harry L. Small	S-I	Struck and run over by engine in backing movement
3/18	Myoma, Cal.	X 5006W	62	30	Died	B	Robert H. Hayes	S-J	Knocked off moving train by trespasser
3/19	El Centro, Cal.	X 5022W	125	6	A12	B	Frank L. Combs	S-J	Trespasser stepped on cut lever causing train to part
5/7	So. Fontina, Cal.	X 3737W	82	—	P21	B	John R. Coleman	S-A	Caught thumb in coupler while coupling cars
5/4	Hasson, Cal.	X 2704W	34	—	A6	B	Clarence C. Burwell	S-D	Sprained arm setting hand brake
5/8	Bassett, Cal.	X 3737W	79	—	A11	B	Byrd E. Weedon	S-G	Stepped on board while getting off train turning ankle
5/17	Aurant, Cal.	822	111	8	P21	B	Frank Soutar	S-J	Undesired emergency application of air brakes due to break in two
6/22	Aurant, Cal.	X 5035W	112	8	A46	C	Carl G. Shaw	S-J	Undesired emergency of air brakes due to train parting
6/24	Colton, Cal.	X 5044W	101	8	A6	B	David A. Wooster	S-J	Sudden stop due to derailment of engine
7/6	Los Angeles, Cal.	2049W	0	6	A13	E	Wm. F. Bergendorf	S-C	Struck side against arm rest on engine cab
7/6	Los Angeles, Euclid Ave.	X 1761E	5	—	P120	B	Albert J. Murphy	S-D	Fell off brake platform while releasing hand brake
7/6	West Anaheim, Cal.	X 1750W	33	10	P60	B	Russell Politte	S-J	Fell off car as coupling made
7/8	Indio, Cal.	X 5026W	99	10	(P90)	B	Walter Q. Orr	S-J	Sudden stop due to air hose blowing off car
8/24	Colton, Cal.	X 5017W	86	20	(P14)	B	Hugh Jones	S-J	Particle of sand in eye
[fol. 5975]					A4	B	John A. Sutton	S-J	
9/2	Oxnard, Cal.	X 1831E	23	4	A13	B	Fred W. Lee	S-J	Lost hand hold through slack action of train
9/7	Cabazon, Cal.	826	97	12	A7	B	Archie Wing	S-J	Thrown off balance due to slack action due to undesired emergency application of brakes
10/23	Santa Susana, Cal.	X 3727W 3725	72	—	P30	B	Edward Stimson	S-J	Thrown off balance due to rough stop

Date	Location	Train No.	No. Cars in Train	MPH	Days Disab.	Class Person	Name of Person	ICC Class	Description of Accident
11/23	Heber, Cal.	X1726W	1	—	A10	B	Ross C. Newton	S-B	Struck by air hose
11/14	Wahoo, Cal.	X2665W	43	—	P21	B	John O'Reilly	S-J	Finger caught between rerailing frog and bracket on engine.
Year 1933									
1/25	Strathern, Cal.	X3703W	62	—	P30	E	D. J. Purcell	S-C	Stepped backward and fell off bridge
1/17	Bertram, Cal.	X2746W	18	1	P30	B	Thos. C. Cline	S-J	While adjusting chain on car hand caught between chain and bottom of car as train moved forward
1/27	Walnut, Cal.	X5026W	79	30	P30	B	Roy H. Allen	S-J	Thrown off balance due to slack action on rear of train
3/13	Elcasco, Cal.	X5048W	98	1	A4	B	Thomas S. Powell	S-J	Thrown off balance due to slack action
3/25	Ontario, Cal.	828	27	0	P21	B	Larry H. Hartley	S-J	Slipped or stumbled and fell while crossing track
4/30	Beaumont, Cal.	828	99	15	(P30) (P30)	C B	James H. Weeks W. A. Wheeler	M-B) B-B)	Thrown off balance due to severe slack action due to break in two of train
5/18	Brawley, Cal.	X2820E	12	2	P21	B	Otis A. Gates	S-D	Fell off car as coupling made
6/28	Brawley, Cal.	X1761E	4	0	A11	C	Wm. T. Sanders	S-G	Stepped on rock while getting off car
[col. 5976]									
6/23	Garnett, Cal.	824	84	30	A15	B	Harry F. Faust	S-J	Foreign substance in eye
8/15	Whittier, Cal.	X1662E	9	10	P14	B	James W. Higley	S-F	Struck by overhead wire while riding on top of train
10/26	Colton, Cal.	X5036W	57	15	P15	B	Frank Soutar	S-J	Thrown off balance in cab due to slack action when train parted.
11/15	San Bernardino, Cal.	X2746W	3	0	A11	B	Max W. Justice	S-E	Switch box cover dropped on foot
11/10	Altamira, Cal.	826	97	15	Killed	B	Frank L. Flaherty	S-J	Apparently fell between cars while receiving freight cars

[illegible]

Date	Location	Train No.	No. Cars in Train	MPH	Days Disab.	Class Person	Name of Person	ICC Class	Description of Accident
10/25	Saugus, Cal.	815	71		P28	B	Roy E. Williams	S-J	Stepped in hole while walking alongside of standing train
10/31	Burbank, Cal.	X2520W	19	10	A11	B	Michael J. Donovan	S-J	Ran into side of auto while crossing highway
11/25	Amos, Cal.	X5008W	124	10	C14	B	Wm. P. Church	S-G	Stepped on rock while boarding moving train
12/2	Glamis, Cal.	X5040W	117	2	P21	C	Wm. H. Cromwell	S-J	Thrown off balance in caboose when train started
Year 1935									
1/1	Mecca, Cal.	X5000W	74	40	P21	B	Emery M. Byrd	S-J	Broken hand rail on tank car
[fol. 5978]									
1/7	Mesquite, Cal.	X5024W	99	12	P21	B	Matt M. Murphy	S-J	Thrown off balance in caboose due to undesired emergency ap- plication of air brakes
1/10	Vicinity of N. Brd. Bldg. L. A.	X5004W	61	15	A6	B	James W. Higley	S-J	Particle hot sand lodged in eye
2/9	Pomona, Cal.	814	74	20	A6	B	Clyde H. Mathews	S-J	Foreign particle lodged in eye
3/22	Van Nuys, Cal.	X2544E	10	20	A9	B	Michael A. Nugent	S-G	Slipped in wet weeds and grass while getting off moving car
3/20	Glamis, Cal.	X5022W	124	30	P30	B	George N. Lacey	S-J	Thrown off balance by slack action due to undesired emer- gency application of air brakes
4/1	Los Angeles enroute to train	Eng. 3673	—	—	P21	F	Robert W. Fallon	S-C	Burned about face and stomach by fire from firebox
5/28	El Centro, Cal.	X1828E	—	4	P14	B	DeForrest Morgan	S-G	Claimed stepped on end of tie while getting off pilot of engine
5/13	Firestone Park, Cal.	X2520W	34	—	P21	C	Dugal W. McIntyre	S-J	Attacked and beaten by un- known assailant
5/29	Chatsworth, Cal.	X2544E	35	—	P14	B	Bert M. Proctor	S-J	Dropped metal running board on foot while getting off moving
			76	10	P60	B	Robert A. Graves	S-G	

6/19 West Anaheim, Cal. N 1769W
6/7 Whittier, Cal. N 1639W

[fol. 5979]

190-56

6/20	Enroute to train Los Angeles	Eng. 4330	—	P14	F	Hugh L. Taff	S-J	Thrown off balance as engine coupled into by another engine
6/23	Mecca, Cal.	X3708W	46	P14	B	Ernest H. Rives	S-J	Claims tripped over tie wire on car
6/24	Stonemap, Cal.	826 (5048)	96	P21	B	Wm. H. Hausman	S-J	*Thrown off balance in caboose by slack action of train
7/13	Mecca, Cal.	X1660W (5007)	4	P21	B	John R. Blankenship	S-E	Dropped switch lever weight on foot
7/3	Fillmore, Cal.	X1787W	—	P21	B	John P. Fowler	S-J	Caught foot between foot board of engine and ground
7/14	Indio, Cal.	2-832	76	P80	B	Charles L. Kuhney	S-I	Struck and run over by engine in back-up movement
7/9	Camarillo, Cal.	X3669W	97	P80	B	John A. Sutton	S-J	*Thrown off balance in caboose by slack action of train
7/22	Heber, Cal.	X1810W	12	P21	B	Charles Bockmen	S-J	Struck by air hose
8/1	Bloomington, Cal.	XW 105	30	Died	B	George A. McCoy	S-D	Fell off top of car
8/2	So. Fontana, Cal.	XW 2578E	2	P15	B	Isaac D. Street	S-D	Fell off top of car
9/11	Anaheim, Cal.	X1746E	12	A7	B	Charles W. Jones	S-D	Claims while releasing hand brake struck by club
9/17	Niland, Cal.	X1726W	12	P14	B	Norris E. Jordan	S-E	Dropped switch lever ball on foot
9/19	Mesquite, Cal.	824	97	P30	B	Samuel J. Rice	S-J	*Claims thrown off balance in cupola of caboose as stop made
9/30	Los Angeles, Cal.	X2681E	21	P21	B	Wm. H. Hausman	S-J	Claims fell while walking through caboose
[fol. 5980]								
10/1	Indio, Cal.	X5036W	64	P45	B	John A. Sutton	S-J	Claims thrown off balance as train stopped
11/17	Glendale, Cal.	811	54	P80	B	Geo. B. Burch	S-J	Shot by unknown person
12/23	Los Angeles, Cal.	X4307W	43	P21	B	Lawrence E. Richardson	S-J	Claims knocked off top of train by sudden stop of train

Struck by auto while flagging
Dropped running board on foot

Earl E. Whitten
Walter W. Whitney

11
2

2

11
2

11
2

11
2

11
2

11
2

11
2

Date	Location	Train No.	No. Cars in Train	MPH	Days Disab.	Class Person	Name of Person	ICC Class	Description of Accident
12/26	Gausti, Cal.	X2788E	13	—	A6	B	Claude Plummer	S-J	Claims struck by rerailing frog which he was handling
12/29	El Casco, Cal.	830	19	—	P21	B	Ben B. Reeves	S-J	Claims sprained back unloading freight from car
Year 1936									
1/8	Indio, Cal.	2-830	99	8	A10	B	Carl A. McCullum	S-G	Claims stepped on rock while getting off car
2/26	Santa Barbara, Cal.	X3669W	4	0	P14	B	Wm. J. Sherer	S-D	Brake staff broke while setting hand brake
2/10	Los Angeles, Cal.	826	108	6	P21	B	Leo Y. Pironi	S-J	*Claims thrown off balance when train parted due to trespasser stepping on cut lever
4/4	Indio, Cal.	834	86	8	A8	B	Fred W. Lee	S-G	While detraining from moving caboose collided with man riding on side of moving car on adjoining train
4/17	Narod, Cal.	X5033W	61	15	P60	B	Virgil E. Holland	S-J	Fell off top of train
5/28	Colton, Cal.	X5007W	58	0	A7	B	Leo Y. Pironi	S-D	Struck by brake club when releasing hand brake
5/1	Tweedy, Cal.	X2423E	8	2	P28	B	Albert J. Murphy	S-J	Claims stepped on block of wood lying on ground
5/2	Indio, Cal.	X5013W	64	0	A4	B	Matt M. Murphy	S-J	Claims sprained wrist prodding livestock
5/29	Colton, Cal.	2-832	96	0	P21	B	Maurice S. Jan Dell	S-J	Stepped on rock while running to board engine
[fol. 5981]									
6/29	San Fernando, Cal.	X3305W	0	0	P45	F	J. P. Cavanaugh	S-C	Fell while getting down off front of engine.
6/30	Van Nuys, Cal.	X1678W	54	8	A6	F	M. J. Crowley	S-C	Threw off balance in cab of engine
6/16	Exton, Cal.	3-932	49	Standing	A60	B	Lyle T. Sullivan	S-C	Fell while getting off car in passenger train

6/25	Holzer, Cal.	X1849E	2	P14	B	Wm. F. Clark	S-G	Stepped in depression when getting off standing car
6/29	Keith, Cal.	X2550E	32	P14	B	Mal P. Haris	S-G	Stepped on rock while running to board moving cars
6/21	Saugus, Cal.	X3752W	0	A8	E	Edward Rudolph	S-J	Struck by piece of lumber extending from side of car in passing train
7/7	Indio, Cal.	X5041W	99	P60	B	Willard McCubbin	S-G	Fell while getting off standing car
7/12	Banning, Cal.	830	23	P28	B	Ashby D. Lane	S-J	Fell off standing car
7/28	Knob, Cal.	X5043W	60	A4	B	Lilo C. Hart	S-J	Claims piece of hot sand lodged in eye
8/21	San Fernando, Cal.	X3707W	0	A8	F	Clarence R. Smith	S-C	Claims fell while getting off standing engine
8/28	Los Angeles, Cal.	2-812	74	P21	B	Russell Politte	S-J	Claims thrown off balance by sudden stop of train
9/19	Los Angeles, Cal. (going out)	Eng. 4325E	—	P45	F	Wesl W. Watt	S-C	Fell off standing engine
9/2	So. Fontana, Cal.	X5018W	74	A20	B	Autie C. Haney	S-J	Fell on top of car due to running board breaking
9/6	Spadra, Cal.	X5042W	111	P28	B	Carl A. McCullum	S-J	Undesired emergency application air brakes
9/27	Oxnard, Cal.	X1784E	5	P21	B	Frank R. Cowlshaw	S-J	Thrown off balance as coupling made
10/2	Colton, Cal.	X2451W	34	A5	B	George J. Abel	S-D	Fell off car while releasing hand brake
10/2	Los Angeles, Cal.	X2448E	83	P14	B	Wm. J. Green	S-D	Struck by brake lever releasing hand brake
[fol. 5982]								
10/10	Iris, Cal.	822	88	A5	B	Vernon W. VonSeidletz	S-G	Stepped on rock getting off standing train
10/11	Niland, Cal.	824	86	P21	B	Robert R. Robinson	S-G	Fell while detraining from moving train
10/19	Niland, Cal.	X5048W	100	P30	B	Richard E. Talbert	S-J	Stepped on rock wrenching knee
11/24	Oxnard, Cal.	X2557E	3	P30	B	Jesse E. Harmon	S-D	Fell from car as coupling made
11/25	Santa Paula, Cal.	X2711W	7	P21	B	Leroy Foster	S-D	Knocked off car while releasing hand brake

Date	Location	Train No.	No. Cars in Train	MPH	Days, Class, Person	Name of Person	ICC Class	Description of Accident
11/17	El Cusco, Cal.	X5024W	47	10	A18 B	Harry F. Faust	S-G	Stepped on rock while getting off moving train
11/19	Iris, Cal.	1-822	68	5	P14 B	Loutz E. Allen	S-G	Stepped on rough ground getting off moving train
11/24	Indio, Cal.	(5025) X5020W	59	20	P21 B	Walter A. Boyd	S-G	Fell while boarding moving train
11/13	Indio, Cal.	Eng. 2360W	—	—	P28 F	James R. Glamen	S-J	Stepped in depression between ties
Year 1937								
1/14	Hewitt, Cal.	3/1	23	Standing	A5 B	Jess Herndon	S-B	Claims burned by hot water while opening steam hose valve
1/25	Saugus, Cal.	X3308E	14	1	A5 B	Henry Oswald	S-G	Claims stopped in hole while getting off train
1/7	Redlands, Cal.	819	9	Standing	A7 B	H. L. St. Clair	S-J	Claims slipped and fell off top of car in standing train
1/25	Caleb, Cal.	X5036W	62	"	A12 C	J. A. Sutton	S-J	Foreign particle in eye
2/16	Oxnard, Cal.	X2551E	25	3	A4 B	R. F. Sugg	S-G	Turned ankle when getting off moving car
3/12	Ailsa, Cal.	X3707W	111	25	A4 C	R. T. Aird	D-B	Carrier iron broke permitting draw bar to drop causing train to break in two throwing conductor off balance, causing injury.
3/24	Brawley, Cal.	X1707E	3	4	P28 C	Wm. Sullivan	S-H	Auto drove in front of train on public crossing, striking conductor
4/2	Los Angeles, Cal.	Eng. 1678E	0	Standing	A20 F	H. F. Anderson	S-C	Slipped and fell while climbing over boiler of engine
4/4	Cabazon, Cal.	3/836	63	15	A9 B	Earl Wittich	S-G	Fell while boarding moving train

[Vol. 5983]

4/15	Los Angeles, Cal.	Eng. 1300	0	4	1930	F. R. A. Walcott	2-1	Struck by engine while walking in center of track
4/17	Narced, Cal.	824	68	20	Killed	B. C. E. Smith	2-1	Apparently fell against moving train on adjacent track
4/7	Pomona, Cal.	X2709W	24	Standing	P45	B. O. M. Freese	S-J	Struck by missile thrown by unknown person
4/16	South Gate, Cal.	X1798E	5	9	P60	B. Russell Politte	S-J	Fell off car when coupling made
4/29	El Centro, Cal.	X1794W	0	Standing	P21	B. R. L. Kruger	S-J	Burned by hot water from engine injector
5/8	Redlands, Cal.	X1829E	4	—	P21	B. Wm. G. Gates	S-D	Claims strained back while re-leasing hand brake on car
5/8	Linco, Cal.	X2711E	11	2	A8	B. H. W. Morgan	S-D	Struck by brake club while re-leasing hand brake
5/24	Mecca, Cal.	X2804E	44	Standing	P21	B. B. W. Bierderman	S-E	Dropped switch lever on ball of foot
4/27	Ontario, Cal.	X2559W	14	2	P21	B. B. A. Reeves	S-G	Claims foot slipped while getting off footboard of engine
5/4	Tweedy, Cal.	X1798W	16	3	A13	B. Chas. R. Fassino	S-J	Claims caught between and knocked off side swiped car
5/23	Knob, Cal.	X5032W	123	2	P21	C. Wm. A. Jordan	S-J	Claims thrown off balance in caboose by slack action on rear end of train
6/7	Saugus, Cal.	Eng. 3320E	0	Standing	P28	F. W. B. Mayfield	S-C	Claims slipped and fell while climbing down off tank of engine
[fol. 5984]								
6/12	Edom, Cal.	Eng. 3766W	0	—	P21	F. J. W. Walden	S-G	Claims stepped on rock while getting off engine
6/17	El Centro, Cal.	X1736E	0	—	A11	B. H. R. Bowles	S-J	Claims foreign particle lodged in eye
6/17	Roscoe, Cal.	X2849E	55	.7	A5	B. F. L. Combs	S-J	Claims thrown off balance when coupling was made
6/22	"	X2747E	1	8	A4	B. J. M. Kelly	S-J	Claims sprained ankle while stepping on cut lever to uncouple engine from caboose

Date	Location	Train No. in Train	No. Cars	MPH	Days Disab.	Class Person	Name of Person	ICC Class	Description of Accident
6/28	El Centro, Cal.	X2713E	21	8	P14	B	G. E. Fry	S-J	*Fell off rear end of caboose as emergency stop was made.
7/12	Indio, Cal.	X1739W	2	Standing	P21	B	Jess E. Harmon	S-D	Claims brake staff bent while setting brake
7/8	Dryden, Cal.	X5025W	122	8	P40	B	E. F. Donahue	S-G	Foot caught under wheel head end caboose of moving train
7/16	N. Los Angeles, Cal.	X2559W	73	6	A16	B	L. E. Richardson	S-G	Claims slipped on ballast shoulder while getting off train
7/12	Colton, Cal.	Eng. 2601E	12	8	P21	B	L. R. Casey	S-J	Claims knocked off side of cut by car standing at close clearance on adjoining track.
7/13	Bertram, Cal.	Ex5018W	119	20	A7	B	G. L. Oswald	S-J	*Thrown off balance in caboose due to car derailling causing sudden stop.
7/14	Brawley, Cal.	Ex1736W	8	4	P45	B	F. F. George	S-J	Claims lost balance and fell from train when coupling was made
7/14	Niland, Cal.	Ex5039W	124	5	P21	B	J. E. Finley	S-J	Claims foot slipped off end of tie while running to catch caboose
7/17	Los Angeles, Cal.	X2294 1801	72	8	P60	B	H. E. Miller	S-J	*Fell off train when sudden stop was made to avoid striking auto on crossing
8/16	Indio, Cal.	X5032W	123	6 1/2	A10	B	J. F. Eschenower	S-J	*Thrown off balance in caboose when train parted due to trespasser stopping on cut lever causing emergency application of air brakes.
[fol. 5985]									
8/17	Auriant, Cal.	X3734W	86	20	A6	E	J. E. Patterson	S-J	Foreign particle in eye
9/4	Chattworth, Cal.	1/812	84	20	P14	B	J. F. Fahey	S-J	Fell off moving train
9/15	Oxnard, Cal.	2/2	25	Standing	P28	F	C. A. Kelsey	S-C	Claims finger caught between water spout & edge of engine front end

10/14	Moorepark, Cal.	X3724W	38	8	P21	B	H. H. Bradshaw	S-G	Claims while boarding train slipped on ballast and fell
10/31	Los Angeles, Cal.	811	66	15	P40	C	James A. McGee	S-G	Apparently missed footing while boarding caboose of moving train
10/7	Dry Camp, Cal.	1/836	67	25	A20	B	D. L. Dillon	S-J	Missed monkey bar in cupola of caboose losing balance and falling on oil locker
10/21	Niland, Cal.	X5025	125	8	P21	C	A. B. Mason	S-J	*Knocked off rear end caboose due to emergency stop caused by train parting causing emergency stop
11/10	Araz, Cal.	X5005W	81	4	P21	B	W. E. Allbright	S-D	Claims chain broke while setting hand brake on car
11/23	Calexico, Cal.	Eng. 1773W	0	12	Killed	B	Geo. Robinson	S-J	Caught between engine tender and car on adjoining track
11/23	Bloomington, Cal.	828	77	25	P14	B	C. C. Koontz	S-J	Claims lost balance and fell while getting out of caboose cupola
12/23	Summerland, Cal.	X1742W	0	0	P21	B	J. L. Todd	S-A	Claims finger caught between cut lever while cutting off cars
[fol. 5986]									
12/28	So. Fontana, Cal.	X5017W	106	10	P14	B	Geo. N. Lacy	S-J	*Thrown against caboose by slack action when train parted causing emergency stop
					P14	B	H. S. Bolster	S-J	
Year 1938									
1/26	Roscoe, Cal.	813	66	3	P21	B	Roy A. Williams	S-G	Ladder rung came loose while climbing up side of car
1/26	N. Los Angeles, Cal.	Ex1784W	16	Standing	A5	E	Patrick Dowd	S-J	Struck by lubricator door falling from passing train
2/10	Saugus, Cal.	815	69	—	A4	B	Wm. S. Brown	S-E	Claims strain while operating switch lever
2/23	Banning, Cal.	Ex2842E	20	5	P45	B	J. E. Harris	S-G	Claims stepped on rock while getting off moving car.

Date	Location	Train No.	No. Cars in Train	MPH	Days Disab.	Class Person	Name of Person	ICC Class	Description of Accident
2/16	Spadra, Cal.	X5025W	58	2	A18 {P40	C B	W. E. Driebelis B. B. Reeves	S-J S-J	Thrown off balance in caboose due to severe slack action caused by undesired emergency application from engine.
3/26	Narod, Cal.	Ex4307W	56	10	P21	B	M. S. Jan Dell	S-G	Apparently twisted foot while getting off moving train
3/20	Lagol, Cal.	X3723W	74	35	A14	B	D. M. Payne	S-J	Struck by water box falling from engine tender
4/8	Indio, Cal.	X5032W	123	Standing	A-6	B	C. W. White	S-D	Strained back while setting hand brake on car
5/20	Glamis, Cal.	X5044W	99	6	A4	B	R. J. Mourning	S-G	Claims stepped on rock while getting off moving car
6/30	Brawley, Cal.	X1809W	1	3	P14	B	J. E. Harmon	S-D	Claims strained back while setting hand brake on car
6/10	Colton, Cal.	828	94	Standing	P14	B	J. L. Todd	S-G	Claims foot slipped off stirrup while getting off standing car
6/25	Pomona, Cal.	X2746W	—	10	A6	B	P. G. Walton	S-G	Claims strained side while get- ting off moving car
[fol. 5987]									
6/12	Hugo, Cal.	836	94	20	P21	B	H. O. Davidson	S-J	Claims stepped on nail head protruding from deck of car
6/30	Santa Barbara, Cal.	X3657W	67	5	P14	B	Wm. W. Lockwood	S-J	Claims thrown against wash basin in caboose due to slack action on rear end of train
7/12	Saugus, Cal.	815	70	Standing	A12	F	R. T. Townsend	S-C	Struck by chain while raising spout after taking water
8/10	Hobbs, Cal.	X2813W	6	Standing	P30	B	C. C. Stephens	S-D	Fell off car while releasing hand brake
8/3	Frink, Cal.	X5025W	121	40	Killed	B	H. V. Crank	S-1	Apparently fell from moving train
9/1	Saugus, Cal.	X2842W	4	Standing	A24	B	P. D. Robinson	S-G	While getting off standing car slipped on sugar beet lying on ground

10/21	Indio-Busamont, Cal.	{5018 5025W}	64	7	P28	F	A. L. Dentenberg	S-C	Claims injured wrist operating injector water valve on engine
10/3	Santa Paula, Cal.	X2713W	12	Standing	A13	B	Wm. P. Church	S-D	Struck by spoke of brake wheel while releasing hand brake on car
10/12	Colton, Cal.	X3671W	86	—	P30	B	Geo. N. Lacey	S-D	Fell off car while releasing hand brake
10/6	Ventura, Cal.	X3675W	51	20	A5	B	E. S. Northrup	S-J	Thrown against caboose ladder on rear platform due to slack action on rear of train
11/28	El Centro, Cal.	X1739E	1	2	P14	C	Rao Frain	S-G	Fell while stepping from ladder to brake platform of car
12/20	Newhall, Cal.	815B	59	Standing	A4	B	E. F. Donahue	S-G	Foot slipped off ladder of engine
12/25	Indio, Cal.	X5039W	86	6	P21	B	J. T. Curley	S-J	Sprained knee while running to board caboose of moving train
[fol. 5988]									
1/16	Indio, Cal.	834	12	3	P120	B	D. A. Randolph	S-J	Lost balance and fell from moving car
1/19	Oxnard, Cal.	X3689E	85	8	A8	B	N. J. Personne	S-J	Claims while stepping from one car to another missed footing and fell to top of car
2/8	Pomona, Cal.	X2741W	17	5	P60	B	G. W. Rugg	S-D	Fell from car while setting hand brake
2/22	Tweedy, Cal.	X1736W	7	2	P30	B	D. M. Payne	S-D	Fell from car when wheel came off while setting hand brake
4/16	Cabazon, Cal.	836	96	Standing	Killed	B	A. C. Reeves	S-D	Fell from car while releasing hand brakes
5/4	El Monte, Cal.	X5024W	64	20	A4	B	K. P. Carrington	S-J	Struck by rock thrown at train hitting him in face
6/13	El Centro, Cal.	X1794	?	?	A5	B	H. R. Bowles	S-J	Foreign particle lodged in eye
6/13	Estelle, Cal.	X4302E	6	?	—	C	M. S. Jan Dell	S-J	Unbalanced in caboose when coupling made

Date	Location	Train No. in Train	No. Cars	MPH	Days -Disab.- Person	Class	Name of Person	ICC Class	Description of Accident
6/18	Colton, Cal.	2/828	66	3	P30	B	F. E. Cushing	S-J	*Thrown over chair, against desk in caboose due to slack action caused by undesired emergency application
8/10	San Fernando, Cal.	X2747E	28	Standing	A10	F	Howard Niday	S-C	Fell on engine tank while taking water
8/19	Fillmore, Cal.	X2577W	32	—	P28	E	D. W. Pillsbury	S-C	Claims strained back while operating reverse lever on engine
8/26	Ontario, Cal.	X2711E	16	—	A7	B	L. R. Stuckler	S-D	Lost hold on brake wheel and fell to ground while releasing hand brake
8/3	Edcm, Cal.	2/834	99	5	P45	B	M. J. Russell	S-G	*Fell from moving train due to slack action of train causing him to lose his hold
8/22	Newhall, Cal.	816	55	20	A6	B	E. B. Harris	S-J	Claims piece of hot sand lodged in eye
[fol. 5989]									
9/11	Bassett, Cal.	2/824	31	5		B	R. E. Wing	S-G	Struck knee on ladder rung while boarding car in moving train
11/4	Ontario, Cal.	X2711W	10	10		B	Max Burt	S-G	Claims stepped on rock while getting off moving car
11/4	Hugo, Cal.	X4197W	58	Standing	P45	B	W. H. Rose	S-J	Car end door dropped on hand
11/9	Tweedy, Cal.	X1760W	42	—	A9	B	S. A. Huff	S-J	Tripped over tie and fell against low sw/stand
11/9	Bassett, Cal.	X4319W	46	?	A14	C	G. C. Sutton	S-J	*Unbalanced by slack action on rear end of train
11/13	Colton, Cal.	X5048W	63	20	A13	B	H. R. Bowles	S-J	Foreign particle in eye
11/24	Niland, Cal.	X5026W	97	10	P3	Live stock			
						Clare-taker	I. B. Allen	S-J	*Undesired emergency applica-

April 17, 1941

Southern Pacific Company

Pacific Lines

Casualties to Passengers and Passenger Employees • Train and Train Service Accident

State of New Mexico

Year 1930

Date	Location	Train No.	No. Cars in Train	Speed MPH	Days Disab.	Class Person	Name of Person	ICC Class	Description of Accident
11/25	Three River, N. M.	12	13	Stdg	P15	C	J. H. Jennings	S-J	Stepped on piece of slag or rock and sprained knee
12/6	Anapra, N. M.	3	12	50	A6	DC	Edwin A. White	S-J	Hand slipped off can opener

Waiter

Year 1931

3/9	Alamogordo, N. M.	3	13	Stdg	A9	Fire	W. H. Bowling	S-C	Lost balance getting down off tank ladder
3/25	Tucumcari, N. M.	12	13	Stdg	P30	Bag handler	Jack L. Haight	S-J	Slipped on wet deck of baggage truck
11/3	Carrizozo, N. M.	12	14	Stdg	A13	DC Waiter	Edward Johnson	S-J	Knife slipped cutting finger and thumb

Year 1932

1/26	Santa Rosa, N. M.	11	9	5	P45	BK	E. J. McFarlin	S-G	Slipped on ice on station platform
11/13	Gallinas, N. M.	12	12	Stdg	A9	BK	C. L. Eiser	S-J	Struck by object believed to have been thrown from #11

Year 1933

Date	Location	Train No. in Train	No. Cars	MPH	Days	Class	Name of Person	ICC Class	Description of Accident
3/21	Anapra, N. M.	2	8	40	P10	Pass	Chas. Lewis	S-J	Passenger collided with Lewis in coach
8/29	Hargis, N. M.	4	11	20	Killed	E	C. J. Crofts	D-E	Erosion of east embankment of bridge gave way under train
					Killed	F	J. Randall		
					P30	B	John Harvey		
					P7	Tr. Att	Milton Gray		
					P30		G. L. Moffett		
					Killed	Pass	P. D. Cook		
					Killed	Pass	M. H. Barley		
					Killed	Pass	Mrs. M. H. Barley		
					Killed	Pass	Mrs. J. C. Whitney		
					Killed	Pass	Michael Lombardi		
					Killed	Pass	Tiovanni Tommaso		
					Killed	Pass	Mrs. Margaret Blackburn		
					Killed	Pass	Mrs. Catherine Sammon		
					Killed	Pass	Sister Mary Cecilia		
					P21	Pass	Angeli Saverio		
					P60	Pass	Miss Julia Buchanan		
					P21	Pass	Chas. Beveli		
					P120	Pass	Rev. P. F. Beaton		
					P30	Pass	Mrs. F. B. Benson		
					P365	Pass	Miss Kathaleen Badgley		
					P120	Pass	Mrs. W. B. Clark		
					P120	Pass	Holger Christenson		
					P30	Pass	Sister Beatrice Gority		
					P60	Pass	Mrs. Clara Bell Greenbaum		
					P14	Pass	Jack Horner		
					P40	Pass	Bro. Albert P. Hewett		
					P7	Pass	Miss Ann Hines		
					P40	Pass	Mrs. W. E. Jordan		
					P40	Pass	Miss John E. Jones		

[fol. 5991]

YEAR 1934									
Date	Location	Train No.	No. Cars in Train	MPH	Days Disab.	Class Person	Name of Person	ICC Class	Description of Accident
6/22	Alamagordo, N. M.	3	14	3	P10	Pass	Mrs. Angeline Sporer	S-J	Lost balance and fell, sprained knee
10/5	Deming, N. M.	2	13	Stndg	P10	B	W. A. Zabrisco	S-B ¹	Steam valve knocked open burning thigh and leg
10/8	Orogrande, N. M.	12	7	50	P15	DC chef	Clarence R. Johnson	S-J	Splinter in palm of right hand
11/20	Strauss, N. M.	1	11	35	A2	Pass	Geo. A. Noel	S-J	Passenger slipped on wet floor of vestibule, sprained back
Year 1935									
1/21	Deming, N. M.	2	12	Stndg	P18	CC Porter	John C. Givens	S-J	Kicked by passenger while detrainng
4/10	Santa Rosa	3	14	Stndg	P45	C	O. L. Snider	S-D	Strained groin setting brake on dining car
[fol. 5993]									
4/11	Tularosa, N. M.	12	6	Stndg	P2	P	Mrs. Lorena Thomas	S-G	Lost footing detrainng and fell
4/10	"	X3699W	40	10	A5	R	A. G. Newell	S-J	Foot slipped and fell to ground
5/4	Mt. Riley, N. M.	4	14	3	P14	Rev. Pass	Mrs. L. Mercey	S-J	Lost balance as train started spraining ankle
6/5	Corona, N. M.	X2428W	14	Stndg	P60	F	R. Meikle	S-C	Lost balance and fell off running board, fractured leg
6/6	Hachita, N. M.	4	14	50	A10	DC waiter	H. F. Howard	S-J	Broken glass cut hand
8/21	Hachita, N. M.	3	14	Unknown	P14	BK	C. L. Eisert	S-J	Piece of steel lodged in eye
10/18	Tucuman, N. M.	11	14	Stndg	P7	P	Mrs. F. W. Strawhun	S-J	Caught hand between seat and coach window while adjusting seat
10/30	Coludabus, N. M.	2-3	9	50	A12	DC cook	Frank Anderson	S-J	Knife slipped cutting hand

2-20 3-17	Orogrande, N. M. Corrizona, N. M.	4 3	16 15	50 Stdg	A8 P21	B Pass	E. J. McFarlin Christian Zerbe	S-J S-J	Foreign object in eye Lost hand held fell from upper berth
4/1	Bet. Malpais & Altair, N. M. M.	1-4	7	45	P7	Pass	Mrs. Rose Turrouh	S-J	Tripped on carpet in tourist car and fell
5/30	Newman, N. M. M.	2-4	12	50	P9	BK	E. McConchie	S-J	Foreign object in eye
6/21	Sefar, N. M.	2-1	14	50	P15	Pass	Miss A. Bourrett	S-J	Sprained ankle when alighting from berth
7/15	Tucumcari, N. M.	12	10	20	P20	New Agent	Frank Lewis	S-J	Foreign object lodged in eye
8/9	Animas, N. M.	11	9	30	A7	Bag. man	L. W. Morrison	S-J	Storage mail fell striking leg and ankle
8/27	Santa Rosa, N. M.	11	9	50	P7	Pass	Mrs. Dorothy Berline	S-J	Coach door closed on foot
[fol. 5994]									
9/2	Columbus, N. M.	1-3	9	4	P-10	DC	Turner Nixon	S-I	Lurch of train spilled hot grease on hand
12/3	Anapra, N. M.	6	12	30	A-10	BK	R. J. Stewart	S-J	Foreign object in eye
Year 1937									
1/3	Near Rio Grande, N. M.	43	10	50	A-5	DC	Henry Bailey	S-J	Wrist cut by broken glass
1/11	Paxton, N. M.	12	10	40	1-4	B.	J. E. Bosta	S-J	Foreign object lodged in eye
3/8	Malpais, N. M.	11	9	50	A1-5	F.	Carl Goers	S-C	Grain of sand lodged in right eye
4/13	Continental, N. M.	44	13	55	P7	Pass	Aubrey Lancaster	S-J	Passenger-claims stumbled over broken bottle lying on floor of car
4/15	Between Denning, N. M. and El Paso, Tex.	2	12	Unknown	1-4	E	C. A. Telford	S-J	Foreign object lodged in eye
4/26	Orogrande, N. M.	44	10	2	2-30	Pass	Mrs. Minnie Johnson	S-J	Lost balance and fell
5/2	Tularosa, N. M.	11	9	Stdg	2-20	B	E. J. McFarlin	S-J	Baggage car door and bar fell on foot
5/4	Bet. Lordsburg, N. M. & El Paso, Tex.	6	12	Unknown	1-4	E	S. H. Rogers	S-C	Foreign object in eye

Date	Location	Train No.	No. Cars in Train	Speed MPH	Days Disab.	Class Person	Name of Person	ICC Class	Description of Accident
6/28	Montoya, N. M.	Ex 4387W	9	Stdg	2-10	WH 4 man	J. M. Beauchamp	S-J	Trunk fell striking left foot
6/22	Carrizozo, N. M.	12	10	Stdg	2-7	Pass	Max Heizler	S-G	Lost balance while detraining from steps of car, spraining ankle
7/6	Akela, N. M.	6	11	45	1-5	Pass	C. J. Wyatt	S-J	Foreign object lodged in eye
7/13	Animas, N. M.	43	13	Unknown	1-7	DC waiter	Henry Ganaway	S-J	Knife slipped while opening package of cereal
9/19	Deming, N. M.	1	12	60	1-8	E	C. E. Vaughn	S-J	Flying particle in eye
10/13	Bet. Duran & Torrence, N. M.	11	8	45	P30	Bag man	K. E. Silvey	S-J	Claims lurch of train strained ligaments in knee
4/14	Valmont, N. M.	4	14	50	P4	Pass	Mrs. P. C. Rubush	S-J	Slipped while attempting to descend in upper berth in pull-man car
[fol. 5995]									
6/18	Vevay, N. M.	2	11	50	P-7	F	C. R. McDowell	S-C	Slipped and squirt hose struck foot
6/29	Sebart, N. M.	2	10	60	P25	Pass	Mrs. May Lane	S-J	Lost balance and fell
8/11	Quincey, N. M.	1	12	Unknown	P-10	Pass	Mary E. Powell	S-J	Alleged brakeman turned seat on foot
11/1	Bet. Rodeo and Hachita, N. M.	4	12	Unknown	A7	F	G. H. Hester	S-J	Alleged sand blew in right eye
11/4	Wilma, N. M.	43	11	60	P14	DC chef	Wm. Miller	S-J	Cut finger with knife
11/24	Pastura, N. M.	43	9	30	P14	B	A. R. Mousier	S-J	Lost footing and fell
Year 1939									
2/4	Hachita, N. M.	4	12	50	A5	Pass	R. C. Scott	S-J	Foreign object lodged in eye
2/14	Atton, N. M.	2	13	30	A5	B	John S. Ford	S-J	Foreign object lodged in shoe
2/15	Payson, N. M.	43	13	30	A5	B	John S. Ford	S-J	Foreign object lodged in shoe

car cutting right arm
Foreign substance lodged in eye
Spilled hot grease on back of
knuckle
Lost balance and fell

S-J
S-J
S-J

PLAINTIFF'S EXHIBIT No. 363 (Witness Hardwicke)

April 17, 1941

Southern Pacific Company

Pacific Lines—Los Angeles, Division

Injuries to Passenger and Passenger Employees *

Date	Location	Train No.	No. Cars in Train	MPH	Year 1930		Name of Person	ICC Class	Description of Accident
					Days Disab.	Class Person			
1/18	Ret. Cabazon & Palm Springs, Cal.	4	12	45	P30	Exp. M	J. M. Bingham	S-J	Dropped box express on foot
1/11	Alhambra, Cal.	1-3	11	8	A5	Yd. man	Raymond A. Shafer	S-J	Struck baggage truck while hanging on side of car
1/2	Simi, Cal.	70	11	Not shown	A-2	Pass	Rosey A. Printz	S-G	Caught heel on edge of car step while detrainning
2/10	Ventura, Cal.	102	15	8	A20	E	L. A. Everley	M-A	Truck drove in front of train
3/1	Los Angeles, Cal.	60	14	Stdg.	P45	F	W. H. Goettsche	S-G	Slipped on steps of car while detrainning
4/3	Santa Barbara, Cal.	32	4	Not shown	A6	Pass	Steve Pappas	S-G	Tripped on step while boarding train
4/11	El Casco, Cal.	104	13	25	P45	Pass	Mrs. D. D. Rogers	S-J	Garbage can on which he was standing tilted causing him to fall
4/18	Hewitt, Cal.	76	15	35	A6	Waiter	Frank La Vigne	S-J	Glass which was wiping broke
8/18	N. Los Angeles, Cal.	77	7	20	A13	F	Patrick Dowd	S-J	Struck head against arm of mail crane

Date	Location	Train No. in Train	No. Cars	MPH	Days Disab.	Class Person	Name of Person	ICC Class	Description of Accident
8/19	Saugus, Cal.	37	2	0	A5	B	Frank Van Duzen	S-G	Slipped on car steps
8/28	Loma Linda, Cal.	2-11	12	50	P60	Pass	James B. Dunlap	S-J	Elderly and feeble passenger unbalanced by ordinary movement of train
8/26	Mira Flores, Cal.	X1768E (mixed)	2		A5	PB	Wm. F. Clark	S-J	Stepped on rock when walking along side of cut to make coupling
8/11	Puente, Cal.	12	10	40	A14	DCW	Wm. Elbert	S-J	Cut finger against plunger of insect sprayer
9/25	Ventura, Cal.	71	9	40	A10	Cook	Samuel Benbo	S-J	Knife slipped, cutting finger
[fol. 5997]									
9/24	Alhambra, Cal.	11	12	15	A9	Tel-egrapher	Horace E. Summer	S-I	Stepped foul of track on which train was moving
10/15	Los Angeles, Cal.	2-73	7	Stodg.	A7	CC Porter	Calia Reed	S-J	Thrown off balance as coupling was made
10/18	Chatworth, Cal.	76	15	40	A20	Chief	Frank Croon	S-J	Pan hot coffee overturned
12/31	Los Angeles, Cal.	59	12	Stodg.	P21	R	Eric Jacobson	S-J	Slipped and fell while hanging up markers on train
Year 1931									
1/26	Palm Springs, Cal.	103	10	—	P21	DCW	Ernest Adams	S-J	Strained back while picking up table
2/6	Los Angeles, Cal.	60	10	8	A4	RMS Clerk	W. E. Larson	S-I	Struck by moving train
2/2	Burbank, Cal.	70	7	20	P30	Pass	Mrs. W. J. Powers	S-J	Pullman step box turned over on foot
3/7	Bassett, Cal.	102	15	45	A6	DCW	E. R. Smith	S-J	Glass broke in hand while wiping it
3/23	Alhambra, Cal.	11	12	20	A18	News Agt.	O. T. Gillett	S-J	Clumsy jerk of train caused him to strain back
6/16	Conechella, Cal.	3	13	20	A15	Ag.	A. W. Pough	S-J	Tripped on edge of car carpet
6/16	San Jose, Cal.	102	9	0	P21	P.P.	A. J. Lawrence	S-J	Car floor changed on train

Date	Location	Age	Sex	Height	Weight	Build	Occupation	Notes
6/24	Santa Barbara, Cal.	78	6				CC. Rd. Johnson	Drinking glass broke in hand
7/30	Los Angeles, Cal.	3	10	Stndg.			Porter Mrs. G. Theopill	Missed footing while detrain- ing and fell
8/6	Alhambra, Cal.	12	8	4			DC Drury Caldwell	Spilled hot soup on foot
9/8	Santa Barbara, Cal.	32	3	Stndg.			Cook B H. B. Williamson	Finger caught between brake lever and top plate while re- leasing brake
11/27	Pomona, Cal.	104	12	35			DC Samuel Slade	Cut finger with knife which he was using
12/18	Burbank, Cal.	76	17	40			DC Chas. McCormick	Cut hand with broken drinking glass
{col. 5998}								
3/3	Indio, Cal.	N5006W	100	5			Live stock P30	Trespasser stepped on cut lever causing undesired emergency application of air brake; Gibson had fractured left hip and White fractured right ribs
6/25	Los Angeles, Cal.	71	9				Exp. M. G. C. Davis	Trunk fell over on foot
8/5	Santa Barbara, Cal.	1-76	15				Chief Norris Brown	Cut finger on orange juice ex- tractor
10/9	Tortuga, Cal.	3	10	20			P14 Pass Miss Violet Barrell	Undermined track due to heavy rainfall
							P14 Pass Byron P. Carey	
							P14 Pass Laura Goodman	
							P14 Pass Mrs. M. E. Giddesall	
							P14 Pass Mrs. Edna B. Jewett	
							P45 Pres. C. R. Green	
							P30 News William C. Stokes	
							A	
19/9	Camarillo, Cal.	69	11	35			B Louis D. Overstreet	Foreign substance blew in eye
11/14	Chatworth, Cal.	69	8	35			P14 Pass Edward F. Sherwood	Mentally unbalanced passenger jumped from moving train

Date	Location	Train No.	No. Cars in Train	MPH	Days Disab.	Class Person	Name of Person	ICC Class	Description of Accident
10/15	Calxico, Cal.	Mixed 357	5	None	P21	B	John H. Prichard	S-J	Stepped on rock spraining ankle
10/25	Glendale, Cal.	76	13	40	P10	Cond	Alfred Farley	S-J	Spilled hot grease on hand
12/11	Los Angeles, Cal.	2	15	Stndg	A5	Conduct	Pan-Walter Lanigan	S-J	Razor blade in tray rack
Year 1933									
1/12	Etiwa, Cal.	Mixed 820	7	35	(Killed)	F	Robert R. Kounce	D-E	Draft of sand over track
1/30	Santa Barbara, Cal.	78	13	0	(Died) P14	E	Davis W. Courtney	D-E	Tripped by trespasser on top of engine and fell to ground
1/9	Glendale, Cal.	26	12	35	A7	F	Stephen T. Sharp	S-D	Knife slipped while cutting orange
1/31	Los Angeles, Cal.	353	2	4	P14	DCW	Arthur J. Starr	S-J	Car door closed on finger
(fol. 5099)									
2/15	Pact. Ontario So. Fontana, Cal.	2	16	35	Killed	C	J. U. C. Caster	S-J	Gun fight between train bandits and conductor. Hold up
5/9	Glendale, Cal.	79	12	8	P14	T	Geo. C. Powers	S-J	Fell while attempting to board moving train
5/13	Banning, Cal.	3	16	0	P30	Pass	Fred D. Byers	S-G	Sprained ankle when detraining
1/24	Los Angeles, Cal.	75	13	18	P15	Pass	Mrs. Walter L. Hart	S-G	Thrown off balance due to train parting acct. emergency application of air to avoid running over trespasser lying on track
2/23	San Joaquin, Cal.	78	12	30 m.p.h.	P31	C	Mrs. Eugene Sternberger	S-J	Trespasser lying on track

9/18	Los Angeles, Cal.	1-26	16	7	7	AS	DCW Wm. Batchelor	E. L. Parker	S-G	Jumped off engine to avoid injury in collision
10/22	Los Angeles, Cal.	77	15	50	P7	Pass	Mr. Roy La Marr		S-J	Worn flange on engine truck wheel and undue stress in negotiating 12-30" curve Claims to have fallen over stepping box in vestibule of car
Year 1935										
2/10	Los Angeles, Cal.	2	10	Stdg	P60	P	Mrs. M. T. Garm		S-G	Caught heel of shoe or turned ankle on car step while de-training
5/5	Oxnard, Cal.	78	14	35	A9	Chf	Chandler Haynes		S-J	Foot burned by hot grease
6/3	Los Angeles, Cal.	51	8	Stdg	P14	P	Mrs. W. E. Henry		S-G	Caught heel of shoe on car step while de-training
6/21	Drylyn, Cal.	1	11	55	P60	P	E. M. Glass		S-G	Mentally deranged passenger jumped off moving train
[fol. 6000]										
6/1	Araz Junc., Cal.	1-363	11	8	P180	P	Mrs. A. R. Ewing		S-J	Became overbalanced and fell backwards in car
6/23	Los Angeles, Cal.	1	14	—	P30	P	Miss Stella Gans		S-J	Claims thrown off balance as stop made
7/30	Bet. Colton & Alhambra, Cal.	3	13	45	P21	P	Ferdinand W. Cole		S-J	Claims fell off seat of car
8/8	Los Angeles, Cal.	76	16	6	P21	P	Miss Louise Park		S-J	Claims thrown off balance as stop made
8/12	Los Angeles, Cal.	25	17	8	P14	Steward	W. D. Gazley		S-J	Thrown off balance by emergency stop to avoid striking vehicle
8/14	Glendale, Cal.	52	9	35	A4	Porter	Shuba. Kelley		S-J	Car window dropped on hand
9/7	Glendale, Cal.	1-76	11	35	A5	4th cook	Arthur C. Henderson, Jr.		S-J	Dish broke in hand
10/19	West Glendale, Cal.	76	16	45	P7	P	Jane S. Coward		D-F	Struck truck on crossing, derailing and damaging train
					P21	P	Mrs. E. M. Early			

Date	Location	Train No.	No. Cars in Train	MPH	Days Disab.	Class Person	Name of Person	ICC Class	Description of Accident
					P30	P	Al Gomez		
					P10	P	David B. Hanna		
					P10	P	F. C. Herman		
					P30	P	Glenn Kellogg		
					P10	P	Philip Messin		
					P15	P	Chas. Mason		
					P21	P	Mrs. H. E. Toomey		
					P30	2nd cook	Alfred Farley		
					P10	3rd cook	Drury Caldwell		
					P6	4th cook	Joseph S. Bailey		
					P10	Pan-try man	Fred Thornton		
					P5	Waiter	Henry Harrison		
					P10	Waiter	Edwin A. White		
					P15	Waiter	Carey Robinson		
					P10		Porter L. J. Green		
					A2	Pull. busboy	C. Scurry		
					A2	Pull. busboy	E. Robinson		
					P20	P	W. H. McKinzie		
10/23	Glendale, Cal.	25	15	20				S-G	Fell while getting off moving train
11/8	El Cerezo, Cal.	1	11	25	P30	P	John E. Finley	S-J	Car door closed on hand
12/19	Los Angeles, Cal.	1-26	11	Stndg	P30	P	Mrs. May B. Carlson	S-G	Fell while detraining
12/18	Los Angeles, Cal.	1-12	9	8	A5	Agent	P. W. Brown	S-J	Cardior closed on hand
12/26	Oxnard, Cal.	1-76	14	20	P24	Agent	Nathan S. Gulliam	S-J	Struck by handle of U. S. mail

[fol. 6001]

5/26	Beaumont, Cal.	5	9	—	P60	P	Mrs. Fanny Cate	S-J	coupling Claims unbalanced by stop of train
6/10	Los Angeles, Cal.	72	6	Stndg	P3	JO	Miss Loretto Height	S-G	Fell while detraining from stand- ing train
6/13	Los Angeles, Cal.	76	16	8	P7	P	Miss Fannie Marshal	S-J	*Thrown off balance by emerg- ency stop made to avoid strik- ing auto
9/30	Los Angeles, Cal.	2-4	9	Stndg	P21	F	George Hamilton	S-C	Claims foot slipped off pilot step while climbing down off standing engine
9/30	Knob, Cal.	1-3	9	50	P3	P	Harry Worth	S-G	Apparently fell or jumped from moving train
9/23	Los Angeles, Cal.	75	15	Stndg	A8	DCW	Jefferson D. Butler	S-J	Bottle while being opened broke in hand
10/10	Venture, Cal.	1	17	50	A7	DCW	Hobert Sampson	S-J	Claims thrown off balance by lurch of train
11/5	Burbank Jct., Cal.	59 (2-1)	13 25	10 Std)	P10	P	Wm. H. Hill Porter	C-A	Passed home signal displaying stop indication
[fol. 6002]									
12/23	Los Angeles, Cal.	2-59	8	Stndg	P21	F	Sidney Jordan	S-C	Fell while climbing out of cab window of engine
Year 1937									
2/25	Tunnel, Cal.	1/59	14	35	P21	Bagm	J. I. Brown	S-J	Claims struck by baggage falling from pile in car
3/25	Van Nuys, Cal.	X2430E	3	Stndg.	A13	B	A. F. Monk	S-B	Struck by air hose as angle cock opened
3/28	Alhambra, Cal.	1	10	—	P7	Pass	Miss L. Author	S-G	Fell when detraining from stand- ing train
4/23	Bet. Amos & Niland, Cal.	5	12	35	P21	B	W. J. Hauser	S-J	Attacked by demented pas- senger

Date	Location	Train No.	No. Cars in Train	MPH	Days Disab.	Class Person	Name of Person	ICC Class	Description of Accident
5/20	El Monte, Cal.	11	9	Stdg.	P14	Pass	Nelson Brushaver	S-J	Cut by breaking bottles
5/20	Edom, Cal.	11	9	40	DCW	Pass	J. S. Strawn	S-J	Claims glass being washed broke in hand
5/11	Indio, Cal.	12	6	Stdg.	A4	F	C. F. Steffes	S-J	Claims foreign particle lodged in eye
7/10	Los Angeles, Cal.	70	16	—	A2½	Pass	J. I. Gytob	S-J	Claims while detrainning kicked ankle with heel of shoe
7/24	Glendale, Cal.	98	12	50	¼ 14	Pass	H. E. Freeman	S-G	Claims stepped off stepping box while detrainning from standing train
8/19	S.a. Susana, Cal.	72	14	40	A7	DC cook	M. Dennis	S-J	Claims cut finger on glass
8/22	Los Angeles, Cal.	352	5	4	P15	DC cook	E. Spencer	S-J	Burned by hot grease
9/12	Los Angeles, Cal.	2/75	14	2	P21	Pass	Miss N. Marquez	S-J	Moving train collided with standing equipment
					P21	Pass	Miss M. File	S-J	
					P10	Pass	Miss A. Wagner	S-J	
					P30	Pass	Miss J. Kelly	S-J	
					P14	Pass	Mrs. R. Fryer	S-J	
					P10	Pass	Mrs. E. L. Clark	S-J	
					P7	Pass	Mrs. K. Monroe	S-J	
					P7	Pass	Nick Fischer	S-J	
					P45	Pass	Mrs. M. E. Cupps	S-J	
					P40	Pass	Miss A. Bramley	S-J	
					P14	Pass	Rev. R. A. Cronwell	S-G	Claims turned ankle while boarding moving train
[fol. 6003]									
9/18	Los Angeles, Cal.	56	8	25	P21	B	H. R. Eaton	S-J	Claims overbalanced by lurch of train
10/15	Colton, Cal.	44	13	Stdg.	P7	Pass	Miss Thelma Schearr	S-J	Slipped and fell while standing on car seat
11/15	Wesley, Cal.	70	15	6	P15	DC	Charles T. Jackson	S-J	Stand overboard when train stopped

Date	Name	Age	Sex	Height	Weight	Build	Complexion	Hair	Eyes	Mouth	Occupation	Address	Remarks
12/6	Strick	71	M	50	11	65	A5	Pass	Mrs. Ella-James	S-J	Stepped on object on car floor, turning ankle		
12/15	Glamis, Cal.	1	M	11	65	A5	Pass	Mrs. Ella-James	S-J	Foreign particle lodged in eye			
2/5	Brawley, Cal.	92	M	2	4	A2	Ex	C. W. Peterson	S-J	Claims thrown off balance by sudden stop of train			
2/23	Cammarillo, Cal.	349	M	2	4	A2	Ex	C. W. Peterson	S-J	Tripped over mail sorting rack standard on floor			
2/26	Los Angeles, Cal.	1/5	M	13	8	(A8)	DC	Wm. D. Hudson	S-J	Jabbed finger while washing silverware			
3/24	Tortuga, Cal.	3	M	11	50	(A8)	DCW	J. S. Clark	S-J	Thrown off balance when emergency stop made			
4/6	Chatsworth, Cal.	76	M	16	60	P21	RMC	J. A. Rittmayer	S-J	Arm contacted range as train rounded curve			
6/30	Los Angeles, Cal.	5	M	14	8	A2	Pass	Grant Stewart	S-J	Main track switch inadvertently lined for siding on which train No. 44 was standing as train No. 5 approached at speed			
7/28	Lagol, Cal.	1/99	M	14	45	P7	DC	Floyd Phillips	S-J				
9/20	Tortuga, Cal.	(5)	M	14	40	Killed	E	R. N. Richardson	C-B				
		(44)	M	11	Stand	P60	F	H. R. Parsons					
			M			P21	B	C. H. Cox					
			M			P21	C	J. D. Cantrell					
			M			Killed	B	Frank Soutar					
			M			P21	F	C. E. Morton					
			M			P10	C	C. R. Rankins					
			M			P10	DCW	J. R. Davis					
			M			P10	Ex	Otto Ruf					
			M			P60	Mess						
			M			P60	RMC	P. J. Burlic					
			M			P60		I. N. Candalaric					

Date	Location	Train No.	No. Cars in Train	MPH	Days Disab.	Class Person	Name of Person	ICC Class	Description of Accident
9/30	Glendale, Cal.	352	2	Stndg.	P60	RMC	C. L. James	C-B	Claims tripped over sack of mail while stacking baggage in car
					Killed	Pass	Miss D. Blocker		
10/6	Canard, Cal.	98	13	60	"	"	Miss R. Easter		
					"	"	Mrs. M. Green		
					"	"	Mrs. E. W. Hall		
					"	"	Miss Amy King		
					"	"	Mrs. Lynn Monroe		
					"	"	Mrs. Avis Sorrel		
					P14	"	Florence A. Tabor		
					P14	"	Elmer Esabrook		
					P21	"	Mrs. P. Erickson		
					P7	"	Mary Holt		
					P21	Pass	Mrs. A. Keich		
					P21	"	Mrs. A. Lively		
					P21	"	Ella Mitchell		
					P21	"	Minnie Morris		
					P21	"	Marie Nogain		
					P14	"	Lillian Richards		
					P21	"	Mrs. D. Rose		
					P21	"	Mrs. R. B. Thornton		
					P21	"	T. B. Wilson		
					P21	"	Mrs. Lucille Bell		
					P30	"	Mac Loyd		
					P30	"	Mrs. Ella E. Mulford		
					P45	"	Mrs. M. McGruder		
					P60	"	Mrs. D. Umruh		
					P14	"	Mrs. A. L. McCullough		
					P21	"	Virginia Green		
9/30	Glendale, Cal.	352	2	Stndg.	A14	Bag man	E. C. Ness	S-G	Claims tripped over sack of mail while stacking baggage in car
					P21	DC	Wm. E. Duke		

Date	Name	Age	Sex	Occupation	Address	City	State	Notes
10/18	Glendale, Cal.	72	M	News Agt.	L. D. Overstreet	Glendale	Cal.	Claims unpaid by agent
11/24	Santa Barbara, Cal.							Train-trained back agent
								Burned by steam while coupling
								steam hose between cars
[fol. 6005]								
1/10	Montalvo, Cal.	94	F	Pass	Mrs. J. Marks	Montalvo	Cal.	Claims slipped while walking through car of moving train
2/11	Saugus, Cal.	59	M	DC cook	Melvin Zimmons	Saugus	Cal.	Claims unbalanced by motion of train
2/26	Ventura, Cal.	2	M	DCW	Hayward Buchanan	Ventura	Cal.	Claims knife slipped which he was using
4/17	Glendale, Cal.	98	M	Pass	Mrs. U. E. Thompson	Glendale	Cal.	Fell while detraining from standing train
7/19	Banning, Cal.	2/5	M	DCW	Virgil Telsie	Banning	Cal.	Stepped into open storage box in floor of diner
8/3	Oxnard, Cal.	1/98	M	DC cook	Berry L. Young	Oxnard	Cal.	Cooler door closed on hand
8/30	Newhall-Saugus, Cal.	51	M	News Agt.	Wm. C. Gagain	Newhall-Saugus	Cal.	Cut thumb on broken bottle
9/15	Hasson	(373) (72)	M	Pass	M. Burns	Hasson	Cal.	Failure of train 373 to move prepared to stop—causing head on collision
			M	Pass	Miss Helen Frank		Cal.	
			M	Pass	Mrs. B. Mancilla		Cal.	
			M	Pass	A. F. Neill		Cal.	
			M	Pass	Miss Ellen Scott		Cal.	
			M	Pass	Miss D. Watson		Cal.	
			M	Pass	Mrs. Andy Davis		Cal.	Claims strained back while boarding standing train
9/17	Moorpark, Cal.	70	M	Stndg.		Moorpark	Cal.	Fell in aisle of car
10/1	Knob, Cal.	44	M	Pass	Stanley Samuelson	Knob	Cal.	Foreign particle in eye
11/16	Loma Linda, Cal.	5	M	DCW	P. A. Wolcott	Loma Linda	Cal.	Claims diner chill box door closed on hand
11/10	Glendale, Cal.	2/76	M	DCW	E. J. Pinkney	Glendale	Cal.	

PLAINTIFF'S EXHIBIT No. 364

April 17, 1941

Southern Pacific Company
Pacific Linés in New Mexico

1940

Casualties to Train and Engine Service Employees

Date	Location	Train	No. Cars	MPH	Dis- ability	Cl. of Person	Name of Person	ICC Class	Description of Accident
1-13	Carrizozo, N. M.	X3704W	93	—	A6	B	A. R. Taylor	SJ	Foreign object lodged in left eye
2-13	Santa Rosa	X3811W	98	8	P10	C	A. R. Jones	SJ	Cut lever on car being lifted by known person causing air to apply in emergency
3-29	Alamogordo	99A	76	3	P6	B	R. P. Clayton	SJ	Alleged adjustment of slack when trains brought to stop
4-10	Lordsburg	X5023W	100	8	P25	B	W. A. Kidd	SJ	Emergency application of train brakes to avoid striking engine
4-29	Kenzin	1-981	62	St'd.	A7	B	M. E. Huff	SJ	Foreign object lodged in right eye
6-24	Lisbon	X5023W	100	40	A12	B	H. W. Bridges	SJ	Undesired emergency applica- tion of brakes
6-28	El Est. Akela & Cambray	X5033W	67	10	A7	C	J. P. Hendrix	SJ	Foreign object lodged in right eye
3-5	Gollinas	996	39	6	P15	B	R. L. Butler	SG	Rear hand hold on right side of engine broke off at top
8-18	Myndus	X3320W	66	10	P10	B	G. J. Gullander	SJ	Emergency stop of train account wrong switch lined and to pre- vent derailment
9-1	Gallinas	994	76	St'd.	P60	B	O. J. Bradley	SJ	Foot slipped and fell into man- hole of engine
10-26	Mosquero	975	27	A9	A9	B	Holt, Whitlock	SJ	Finger crushed between locomotive and base of locomotive

11-10	Ancinas	902	24	St'd.	A4	C	S. McCraine	SJ	Cattleloading board fell on in-step
11-18	Carrizozo	X3801W	63	8	A7	C	L. J. Benson	SJ	Lost balance and fell to floor of caboose as train departing terminal alleged due to adjustment of slack
11-26	Lordsburg	X5013W	70	St'd.	P30	B	H. F. Muse	SJ	Attacked by trespasser
3-26	Steins, N. M.	2-866	61	3	P20	B	J. W. Pence*	SJ	Walking over cattleguard foot slipped turning ankle
6-7	Cavot	1-845	60	20	P180	B	H. D. Wester*	DC	Flange broke off car in moving train causing derailment

* Denotes slack action.

* Tucson Division but happened in New Mexico.

[fol: 6008]

PLAINTIFF'S EXHIBIT No. 365

April 17, 1941

Southern Pacific Company
Pacific Lines—Los Angeles Div.

1940

Casualties to Train and Engine Service Employees

Date	Location	Train	No. Car	MPH	Dis-ability	Cl. of Person	Name of Person	ICC Class	Description of Accident
1-29	West Anaheim, Calif.	X1813E	17	St'd.	P28	F	Geo. A. Hiltz	SC	Fell off engine tender
1-26	Los Angeles	830	—	—	P14	C	Clarence G. Burwell	SI	Struck by cut of cars while standing foul of track
1-20	Tweedy	X1760	22	St'd.	P60	B	Bennett T. Turner	SJ	Stepped on main track in front of approaching motor car

Date	Location	Train No.	No. Cars	MPH	Disab. Person	Class Person	Name of Person	ICC Class	Description of Accident
1-28	Niland	822	97	St'd.	P21	B	Andrew B. Gibson	SJ	Fingers caught while lifting broken draw bar onto end sill of car
2-1	Vinvale	X1760E	2	St'd.	P28	B	Raymond E. Hall	SD	Struck by brake club while releasing hand brake on standing car
2-23	Somerland	X2546W	4	10	A6	C	Thos. S. Powell	SG	Fell while boarding caboose of moving train
3-8	Pomona	X2842E	2	St'd.	A19	B	Morris S. Jandell	SD	Struck by brake wheel while releasing hand brake on standing car
4-24	Mecca	X4192W	98	40	A12	B	Leon P. Jones	DC	Burned off journal on car emergency application Brakeman injured in cab
4-17	Riverside	X1736E	1	St'd.	A5	B	Lewis Croller	SD	Thumb struck by brake wheels spoke while releasing hand brake on car
5-28	Banning	X5008W	40	St'd.	P14	B	Javious E. Harris	SD	Struck by brake club while releasing hand brake on standing car
5-15	Coachella	X4187W	87	8	A19	B	Wayne C. Deupree	SJ	Fell to top of car when unbalanced by coupling
5-2	Edom	X4200W	99	8	A5	C	Clarence G. Burwell	SJ	Unbalanced in caboose by unsired emergency application of air brakes
6-3	Twedy	X3617E	5	St'd.	P21	B	Buster Altizer	SD	While setting hand brake fell against end of car when brake suddenly released
[Vol. 6009]									
6-13	San Gabriel	X2851E	10	St'd.	A6	B	Leonard R. Sickler	SJ	Stepped on piece of ballast while running to labeled moving car
7-25	South Fontana	X2824	91	St'd.	A6	C	Paul W. Thomas	SD	Strained arm against side of moving car

7-12	Los Angeles	7-31	Chino	N 2820W	5	3	A4	C	James A. Galloway	SG	Best rack shifted on car as coupling made
8-16	Los Angeles	8-17	Oxnard	0	0	0	P28	B	Wm. E. Albright	SG	Roller around piece of ice which he was carrying as he was in the act of getting off moving car, broke, causing him to lose balance and fall
8-6	Aliso	8-17	Oxnard	X2820W X1742E	57 4	30 4	P28 P21	B C	Kenneth M. Beal Weldon W. Wirt	SJ SJ	Foreign particle in eye While walking alongside of moving cars giving stop signal with lantern in right hand, door of parallel car closed with hand Fell from car while setting hand brakes
9-6	Indio			X5001E	94	Sc'd	P60	B	Frank J. Costello	SG	Fell from car when coupling made
9-15	Oxnard			X1793E	6	5	P60	B	Raymond E. Hall	SG	Fell while in act of boarding caboose of moving train
9-24	Colton			Ex4201W	65	6	P21	B	Wm. E. Albright	SG	Walked into side of engine of moving train
9-2	Indio			Ex5024E	78	25	Killed	B	Lillo G. Hart	SI	Run over by train
9-5	El Centro			Ex1721W	16	3	Killed	C	Gordon Smith	SI	Foreign particle in eye
9-28	Mecca			Ex1809E	—	—	A9	C	Humbert J. Saizan	SJ	While inspecting engine slipped on wash rack runway
9-29	Los Angeles			Eng. 2307W	—	—	A7	E	Paul E. Gordon	SJ	
[fol. 6010]											
10-7	Ventura			Ex4200E	91	—	P-28	B	Harry F. Faust	SD	Claims hand brake released while setting brake on standing car
10-22	Amos			Ex4195W	66	40	Killed	B	Volney D. Richards	SI	*Fell from and run over by train
11-17	Beaumont			Ex5044W	101	8	P-21	B	Bert W. Biederman	SG	Fell while boarding moving train
12-17	Los Angeles			822	84	—	P-21	B	Henry H. Chemnitz	SD	Struck by brake club while releasing hand brake on standing train

Date	Location	Train No.	No. Cars	MPH	Disab. Person	Class	Name of Person	ICC Class	Description of Accident
12-26	Ventura	Ex4187W	58	15	A10	B	Chas. E. Murphy	SG	Fell while attempting to board moving train
12-4	Indio	Ex5043W	100	12	P60	B	Leonard R. Sickler	SI	Fell from and run over by train
12-10	Twedy	Ex1809E	1	4	P21	B	Wm. O. Williams	SJ	right foot severed at ankle
12-28	Mecca	Ex5005W	123	35	P14	C	John A. Sutton	SJ	Fell from car as coupling made Unbalanced by sudden stop when undesired application of air brakes occurred.

* Denotes slack action.

[fol. 6011]

PLAINTIFF'S EXHIBIT No. 366

April 17, 1941

Southern Pacific Company
Pacific Lines in Arizona

1940

Casualties to Train & Engine Service Employees

Date	Location	Train	No. Cars	MPH	Disability	Cl. of Person	Name of Person	ICC Class	Description of Accident
2/23	Tucson Ariz.	X3643W	60	St'd.	P-21	B	W. R. Eaton	S-D	Fell from top of standing car apparently while releasing hand brake.
3/16	Dragoon	2/862	70	3	P-45	B	W. C. Alexander	S-J	Train made rough coupling to engine.
4-4	Dixie	901	67	St'd.	P-25	B	J. C. Slade	S-G	Getting off standing car stepped on wheels.

192-56	5/14	Bowie	2/846	69	2	A-6	B	James K. Bragg	S-G	Claims alighting from engine stepped on piece of slag and turned ankle
	5/3	Wymola	904	47	6	P-20	B	J. S. Hardwicke	S-J	Claims fell over piece of slag or rock striking knee on tie
	6/3	Red Rock	X3663W	56	8	A-6	C	W. H. Gladden	S-J	*Slack action in train
	6/6	Red Rock	904	35	St'd.	P-10	F	C. R. McGowan	S-J	Claims wheel shoving water spout into manhole in tank foot slipped in between boards
	6/15	Gila	X3742W	63	8	P-90	B	T. O. Lowe	S-J	Fell from top of car in switching movement
	6/22	Yuma	3/841	66	8	P-60	B	D. R. Mills	S-J	Riding in engine cab leg was caught between cab and tender
	[fol. 6012]									
	7/11	Sibyl	X3660W	0	St'd.	A-4	F	F. H. Rhodes	S-G	Claims when getting on engine turned ankle on slag
	7/25	Benson	3/866	55	St'd.	P-14	B	Jack Gray	S-G	Stepped on piece of broken glass bottle as alighting from engine
	7/17	Tucson	Eng. 5026	0	St'd.	A-4	F	C. F. Samuelson	S-J	Slipped on piece of ice on engine as reached out to avoid falling wrenched back
	10/23	Cashion	901	68	4	A-4	B	J. W. Vance	S-G	Brakeman jumped off car as it went over derail
	11/8	Tanque	883	49	St'd.	A-5	F	J. F. Stubblefield	S-J	Claims when descending from water car misstepped and fell against foot board of tender
	11/10	Buckeye	901	37	St'd.	A-15	C	C. C. Pennington	S-J	Heavy crate on truck became over balanced throwing weight against man wheeling truck
	12/23	Fairbank	(964 X3305W	69 70	5 St'd.	A-5	B	H. I. Schetter	S-J	Stepped in opening between engine boards of engine and tender

* Denotes slack action.

[fol. 6013]

PLAINTIFF'S EXHIBIT No. 367 (Witness Hardwicke)

April 17, 1941

Southern Pacific Company
Pacific Lines—Salt Lake Division

1940

Casualties to Employees in Train and Engine Service

Date	Location	Train	# Cars	MPH	Disab.	Class	Name of Person	ICCNW Class	Description of Accident
1/20	Emlay, Nev.	574	108	Strdg.	P-20	B	W. B. Hilbish	S-J	Claims strained muscles in back while opening vent on car
5/3	Desert "	566	84	5	P20	B	R. Sexton	S-J	Brakeman lost hold and fell from car to ground
5/10	Sparks, Nev.	Eng 4154	0	Strdg.	P15	F	Otto L. Hecker	S-J	While stepping from marker box fell and sprained ankle
5/27	Fernley, "	552	48	2	P10	F	W. W. O'Neil	S-J	Claims lost balance and fell against desk when coupling to caboose
7/27	Battle Mt. "	Ex 3753W	125	20	P10	B	W. B. Hilbish	L-B	Rupt main crank pin broke due to progressive fracture, brakeman lost balance fell to floor of caboose
7/29	Sparks	Eng 4173	0	Strdg.	P10	E	M. W. Hurto	S-C	Struck throttle lever as he raised up
7-15	Carlin, "	578	96	3	P15	B	W. A. Iachelle	S-J	Lost balance and fell when train stopped
9/24	Detho, "	1/562	97	30	P10	DHB	F. W. Schilling	S-J	Lost balance and fell against window of cupola dye sudden stop
10/26	Valley, "	Ex 3640W	66	40	A-4	C	Jos. W. Ahrhart	L-B	Reverse gear piston rod stuffing box disconnected and fell from train

13-10 Valley Pass, 1/14 Rte. Death and Elko, Nev. 39

[fol. 6014]

2-25 Verdi, Nev. 9
 8-24 Rye Patch 2/88
 10/10 Lovelock, 87
 10/22 Cobre 2/28

• Slack action.

[fol. 6015]

55 9
 A-5, DCW Emile Aubert.
 35 13
 40 15
 Stndg 11
 4 P15 15
 C G. E. Bowers

PLAINTIFF'S EXHIBIT No. 367 (Witness-----)

April 29, 1941

Southern Pacific Company
 Pacific Lines* 1940

Casualties to Employees in Train and Engine Service*

Date	Location	Train No.	No. Cars in Train	MPH	Days Disab.	Class Person	Name of Person	ICC Class	Description of Accident
1/20	Emlay, Nev.	574	108	Stndg.	P-20	B	W. B. Hilbish	S	Claims strained muscles in back while opening vent on car
5/3	Desert "	566	84	5	P-20	B	R. Sexton	S-J	Brake-man lost hold and fell from car to ground
5/10	Sparks, Nev.	Eng. 4154	0	Stndg.	P-15	F	Otis L. Hoeker	S-J	While stepping from marker box fell and sprained ankle
5/27	Fernley, "	552	48	2	P-10	F	Ralph W. O'Neil	S-J	Claims lost balance and fell against desk when coupling to caboose

Date	Location	Train No.	No. Cars in Train	MPH	Days Disab.	Class Person	Name of Person	ICC Class	Description of Accident
7/27	Battle Mt. Nev.	Ex3753W	125	20	P-10	B	W. B. Haldibish	L-B	• Right main crank pin broke due to progressive fracture, brakeman lost balance fell to floor of caboose
7/29	Sparks	Eng. 4173	0	Stndg.	P10	E	M. W. Hurto	S-C	Struck throttle lever as he raised up
7/15	Carlin,	578	96	3	P-15	B	W. A. Lashelle	S-J	• Lost balance and fell when train stopped
9/24	Ditho,	1/562	97	30	P-10	DHB	F. W. Schilling	S-J	• Lost balance and fell against window of cupalo due sudden stop
10/26	Valery,	Ex3669W	98	40	A-4	C	Jas. W. Airhart	L-B	• Reverse gear piston rod stuffing box disconnected and as train came to stop conductor injured in caboose
11/16	Clark, Nev.	1/562	98	35	P-21	C	F. E. B. Gates	S-J	• Lost balance and fell in caboose
12/10	Valley Pass,	4/576	95	20	Died	B	Wallace E. Sorenson	S-J	• Lost balance and fell between cars

• Slack Action

[fol. 6016]

PLAINTIFF'S EXHIBIT No. 367A (Witness—)

April 29, 1941

Southern Pacific Company
Pacific Lines—1940

Casualties to Passengers and Passenger Employees

Date	Location	Train No.	No. Cars in Train	MPH	Days Disab.	Class Person	Name of Person	ICC Class	Description of Accident
1/14	Des. Beach and	30	0	0	A-5	DHB	W. E. Smith	S-J	• Caught in wheels of engine

Claims - slipping
when alighting from train
Claims foot slipped while board-
ing car in moving train.

S-G
S-G

11
15

87
2/28

10/10 Lovelock,
10/22 Cobre

*Slack Action.

[fol. 6017]

PLAINTIFF'S EXHIBIT No. 368 (Witness Hardwicke)

April 17, 1941

Southern Pacific Company
Pacific Lines in New Mexico, 1940

Casualties to Passenger and Passenger Employees

Date	Location	Train No.	No. Cars in Train	MPH	Days Disab.	Class Person	Name of Person	ICC Class	Description of Accident
2-13	Lordsburg, N. M.	2	14	Stdg	P15	P.B.	C. L. Roberts	S-G	Sprained ankle detraining from standing car.
2/10	Lordsburg, "	43	13	—	P21	P.F.	Thos. J. Durkin	S-J	Failure super heater supply pipe flange studs due to fatigue of metal burns and sprained ankle. Strained back lifting express car door on track.
4/8	Vaughn, N. M.	4	13	55	A-9	Ex.	A. P. Weikert	S-J	Lost balance and foot caught between trunk being loaded on coach and vestibule door.
6/14	Tucumcari, N. M.	3	13	Stdg.	A-4	Mess News Agt.	J. E. Barrett	S-J	Can fruit fell from locker in diner and struck head.
8/26	Oro Grande, N. M.	43	12	60	A6	DCW	Fred Thornton	S-J	Alleged foreign object lodged in right eye.
9/2	Roberts, N. M.	4	13	40	A9	Pass	F. H. Keith	S-J	Slipped and fell while detraining from passenger car
11/10	Tucumcari, N. M.	4	12	Stdg	P3	Pass	Albert del Castillo	S-G	

[Vol. 6018]

PLAINTIFF'S EXHIBIT No. 369. (Witness Hardwick)

April 17, 1941

Southern Pacific Company
Pacific Lines in Arizona

Casualties to Passengers and Passenger Employees, 1940

Date	Location	Train No. in Train	No. Cars	MPH	Days Disab.	Class Person	Name of Person	ICC Class	Description of Accident
2/14	Fairbank, Ariz.	44	14	50	A-6	DC	Wm. H. Miller	SJ	Foreign object in left eye
3/28	Phoenix, "	44	12	Stdg	P14	Pass	Mrs. Georgia Beenam	SG	Slipped and fell on coach steps when detrainng
3/16	Bet. Bridge 947.11 & dock Phoenix, Ariz.	43	12	Not known	P45	Pass	Mrs. Richard Sharp	SJ	Alleged sudden stop of train
3/31		4	14	Stdg	P14	Pass	Mrs. Dean LaGrange	SG	Heel caught on car step when detrainng
3/16	Bet. Dock & Phoenix, Ariz.	5 & 43 consol.	26	Not known	P7	Pass	Mrs. Leessie Walker	SJ	Alleged jerk of train complained of severe pains in head, arm and right leg.
3/20	Tucson, Ariz.	44	14	2	P7	Pass	Mrs. Ozelia Rach-Walski	SJ	Step box fell over on passenger foot
4/24	Phoenix, Ariz.	44	12	Stdg	P3	Pass	James E. Hines	SJ	Claims slipped on wet floor of car and fell
5/24	Bet. Raso and Drury	43	11	50	P10	Pass	Miss Helen Murray	SJ	Claims train jerked as going out car door
7/16	Cozador.	44	14	48	P4	DCW	Franklin Eddings	SJ	Water glass broke while being dried
10-1	Coolidge	5	14	Stdg	P3	Pass	L. M. Russell	SG	Main claims when detrainng that he slipped on car step and

12/23 Phoenix, Ariz.

2-43

13

5

P7

P7

Mrs. C. H. Henbuen

S-J

Engineer applied air in emergency to avoid striking people crossing track in front of engine.

* Slack action.

[fol. 6020]

PLAINTIFF'S EXHIBIT No. 370 (Witness Hardwick)

April 17, 1941

Southern Pacific Company
Pacific Lines—Los Angeles Division 1940

Casualties to Passenger and Passenger Employees

Date	Location	Train No.	No. Cars in Train	MPH	Days	Class	Name of Person	ICC Class	Description of Accident
1-7	Ventura, Cal.	69	12	50	P10	Pass	Mrs. Benj. F. Adams	S-J	Tripped and fell while passing through vestibule of car
2-9	Sta. Barbara	76	16	—	P7	Ex. Mess	Dan Kintner	S-J	Bitten by dog while attempting to get check attached to collar
5/10	Ontario, Cal.	3	12	—	P21	Ex. Mess	Marshall P. Phillips	S-J	Struck by closing car door fracturing jaw
6/27	Indio, Cal.	44	11	12	A-7	B	Albert W. Paugh	S-G	Claims stopped on rock while getting off moving train
8/22	Ordway, Cal.	44	11	40	Killed	Pass	Mrs. Alice M. Von Hermann	S-G	Jumped from moving train with suicidal intent
8/6	Sta. Barbara	76	14	—	P28	P.C.	Harry J. Hatch	S-J	Fell in open bed well in diner hallway
8/26	Ventura, Cal.	2/99	8	30	P14	DCW	Anthony Desdunes	S-J	Finger contacted broken drinking glass in kitchen sink
10/25	Tortuga	43	10	25	A7	B	Geo. W. Ballinger	S-J	While looking ahead for signal foreign particle lodged in eye
11/6	Sanguis	56	13	2	P7	Pass	Mrs. L. R. Sullivan	S-J	Unbalanced as train started

Plaintiff's Exhibit No. 382
Apr. 29, 1941

16

INTERSTATE COMMERCE COMMISSION

SUMMARY No. 24.—Highway grade-crossing accidents, showing by State, total casualties and accidents in which automobiles were involved, for the year ended Dec. 31, 1939

No.	State	Train and train-carrier casualties at highway grade crossings									
		Number of accidents	Percent of accidents in highway grade-crossing accidents	Total persons		Casualties resulting from accidents in which automobiles were involved					
				Killed	Injured	Number of accidents	Percent of casualties in accidents involving automobiles	Total persons	Number of automobiles registered	Percent of casualties in accidents involving automobiles	Percent of casualties in accidents involving automobiles
								Killed	Injured		
1	Alabama	25	1.34	37	65	25	1.25	34	65	257,252	0.47
2	Arizona	15	.30	6	15	15	.23	15	15	155,000	1.20
3	Arkansas	25	1.00	10	94	25	1.07	14	99	257,257	0.40
4	California	255	4.00	120	235	255	4.70	111	245	2,327,004	0.40
5	Colorado	60	1.00	17	43	60	1.07	17	43	255,000	1.00
6	Connecticut	17	.34	6	17	14	.20	4	16	255,254	.10
7	Delaware	10	.10	6	7	8	.13	3	6	60,000	.10
8	Florida	60	1.00	64	67	60	1.00	60	60	255,000	1.00
9	Georgia	60	2.43	64	114	60	2.51	64	114	410,000	1.12
10	Idaho	11	.30	1	10	9	.27	1	10	150,000	.05
11	Illinois	400	10.07	247	600	200	10.00	200	600	1,000,700	1.20
12	Indiana	204	6.00	170	201	204	7.00	160	200	900,000	1.72
13	Iowa	120	2.07	62	141	110	2.00	60	134	720,014	0.60
14	Kansas	117	2.00	20	140	100	2.00	20	107	577,000	0.40
15	Kentucky	70	1.00	31	73	60	1.07	34	67	372,000	0.60
16	Louisiana	75	1.07	10	60	60	1.71	10	60	200,000	.20
17	Maine	9	.10	7	7	7	.10	6	6	101,004	.05
18	Maryland	30	.00	7	30	20	.00	4	20	270,000	.11
19	Massachusetts	27	.42	11	17	10	.31	6	10	610,711	.07
20	Michigan	200	6.00	127	240	200	7.12	114	220	1,370,000	0.60
21	Minnesota	121	2.77	42	144	110	2.00	30	130	700,000	0.60
22	Mississippi	70	1.00	20	60	60	1.00	20	60	200,000	1.20
23	Missouri	131	2.24	63	170	117	3.41	60	100	600,010	0.60
24	Montana	12	.21	2	12	11	.21	1	12	107,100	.00
25	Nebraska	64	1.00	20	73	57	1.04	20	73	410,707	0.60
26	Nevada	10	.10	4	7	7	.13	3	6	20,000	.20
27	New Hampshire	6	.12	1	7	6	.13	1	7	120,000	.05
28	New Jersey	67	1.10	14	61	60	1.10	13	60	940,412	0.14
29	New Mexico	11	.20	9	16	11	.30	9	15	100,000	0.60
30	New York	190	4.11	64	190	100	4.04	67	100	2,400,042	0.27
31	North Carolina	61	1.34	21	61	54	1.34	27	50	604,517	0.44
32	North Dakota	31	.45	7	28	10	.40	7	10	107,341	.02
33	Ohio	373	5.00	162	302	320	5.00	104	277	1,777,000	0.57
34	Oklahoma	62	2.07	30	100	81	2.07	30	100	401,014	0.40
35	Oregon	52	1.10	17	57	30	1.10	14	57	320,720	0.40
36	Pennsylvania	300	4.00	60	240	104	4.21	41	230	1,010,110	0.31
37	Rhode Island	1	.01	1	1	1	.01	1	1	100,100	.01
38	South Carolina	40	1.31	31	60	41	1.10	10	54	270,000	0.60
39	South Dakota	31	.82	6	30	31	.87	6	30	100,000	.20
40	Tennessee	60	1.07	16	50	50	1.41	13	70	300,700	0.20
41	Texas	343	5.73	64	319	300	5.34	60	270	1,470,124	0.37
42	Utah	17	.43	4	20	10	.44	4	20	100,000	.04
43	Vermont	10	.30	3	17	10	.30	3	17	60,100	.03
44	Virginia	64	1.12	22	64	30	1.12	20	64	417,000	0.60
45	Washington	54	1.10	9	71	52	1.20	6	70	600,700	0.10
46	West Virginia	52	1.34	16	67	47	1.20	13	64	200,000	0.60
47	Wisconsin	127	2.35	43	122	114	2.40	20	174	604,170	0.40
48	Wyoming	8	.10	1	9	7	.14	1	8	70,000	.10
49	District of Columbia									101,310	
50	Total	4,277	100.00	1,700	4,000	2,700	100.00	1,519	4,002	20,221,201	0.64

Figures furnished by Bureau of Public Roads, United States Department of Commerce

No.	State	Number of accidents	Percent of accidents to highway traffic involving automobiles	Total persons		Number of accidents	Percent of accidents to highway traffic involving automobiles	Total persons		Number of automobiles registered	Casualties per 10,000 automobiles registered	
				Killed	Injured			Killed	Injured		Killed	Injured
1	Alabama	28	1.34	17	65	28	1.35	34	65	287,282	0.47	2.25
2	Arizona	15	1.29	8	15	15	1.29	15	15	115,000	0.47	1.29
3	Arkansas	10	1.00	10	10	10	1.00	10	10	115,000	0.47	1.29
4	California	120	1.00	120	200	120	1.00	111	200	2,287,000	0.47	1.29
5	Colorado	17	1.00	17	65	17	1.00	17	65	287,282	0.47	1.29
6	Connecticut	17	1.00	6	17	14	1.00	4	16	287,282	0.47	1.29
7	Delaware	10	1.00	6	7	8	1.00	6	6	287,282	0.47	1.29
8	Florida	10	1.00	24	67	20	1.00	20	65	287,282	0.47	1.29
9	Georgia	10	2.00	60	114	50	2.00	60	100	115,000	1.12	2.00
10	Idaho	11	1.00	1	10	9	1.00	1	10	115,000	0.47	1.29
11	Illinois	120	10.07	367	600	200	10.00	200	600	1,000,700	1.20	2.00
12	Indiana	120	4.00	170	201	204	7.00	180	220	600,000	1.70	2.10
13	Iowa	120	2.07	122	141	110	2.00	65	124	720,414	0.47	1.00
14	Kansas	111	2.00	20	100	100	2.00	20	107	372,000	0.47	2.70
15	Kentucky	70	1.00	21	72	67	1.47	24	67	372,000	0.47	1.00
16	Louisiana	70	1.07	19	66	60	1.71	10	60	300,000	0.47	2.00
17	Maine	10	1.00	6	7	7	1.00	6	6	101,000	0.47	1.00
18	Maryland	10	1.00	7	24	20	1.00	6	20	270,000	0.47	1.00
19	Massachusetts	10	1.00	11	17	10	1.00	6	13	310,711	0.47	1.00
20	Michigan	120	6.00	127	240	200	7.12	114	200	1,370,000	0.47	2.30
21	Minnesota	121	2.77	42	144	110	2.63	20	120	700,007	0.47	1.70
22	Mississippi	70	1.00	20	60	60	1.00	20	60	200,000	1.20	4.00
23	Missouri	121	2.00	53	170	117	3.41	65	100	600,015	0.47	2.00
24	Montana	17	1.00	2	12	11	1.00	1	12	147,100	0.47	1.70
25	Nebraska	64	1.00	20	72	57	1.54	20	72	412,707	0.47	1.70
26	Nevada	10	1.00	4	7	7	1.00	2	6	20,000	0.47	1.00
27	New Hampshire	10	1.00	1	6	6	1.00	1	6	120,000	0.47	1.00
28	New Jersey	10	1.00	10	61	60	1.15	13	60	942,412	0.47	1.00
29	New Mexico	11	1.00	9	15	11	1.00	9	15	100,700	0.47	1.00
30	New York	102	4.11	84	100	100	4.04	67	100	2,442,642	0.47	1.70
31	North Carolina	101	1.34	25	61	54	1.34	27	60	604,517	0.47	1.10
32	North Dakota	10	1.00	7	10	10	1.00	7	10	147,201	0.47	1.00
33	Ohio	120	8.16	182	202	220	8.00	124	277	1,777,000	0.47	2.12
34	Oklahoma	10	2.07	60	100	61	2.07	20	100	101,000	0.47	1.00
35	Oregon	10	1.10	17	57	60	1.15	14	60	200,700	0.47	1.70
36	Pennsylvania	100	4.00	60	262	164	4.21	41	210	1,012,110	0.47	1.10
37	Rhode Island	10	1.00	1	1	1	1.00	1	1	100,000	0.47	1.00
38	South Carolina	10	1.21	21	60	41	1.10	10	45	270,000	0.47	1.00
39	South Dakota	10	1.00	6	20	21	1.00	6	20	100,000	0.47	1.00
40	Tennessee	10	1.07	16	55	56	1.41	12	73	200,700	0.47	1.00
41	Texas	102	8.73	60	310	200	8.34	65	270	1,470,124	0.47	1.00
42	Utah	10	1.00	4	20	15	1.00	4	20	110,000	0.47	1.00
43	Vermont	10	1.00	3	17	10	1.00	3	17	84,100	0.47	1.00
44	Virginia	10	1.13	22	64	30	1.13	20	64	417,000	0.47	1.00
45	Washington	10	1.10	9	71	52	1.20	8	70	600,700	0.47	1.00
46	West Virginia	10	1.24	16	67	47	1.20	13	64	200,000	0.47	2.20
47	Wisconsin	127	1.25	43	122	114	2.00	20	174	600,170	0.47	2.00
48	Wyoming	10	1.00	3	9	7	1.00	1	8	70,000	0.47	1.00
49	District of Columbia	10	1.00	1	1	1	1.00	1	1	101,210	0.47	1.00
50	Total	4,277	100.00	1,708	4,000	2,700	100.00	1,619	4,000	20,221,201	0.47	1.00

Figures furnished by Bureau of Public Roads, United States Department of Agriculture, and cover passenger automobiles, motortrucks, and motorbuses.

Figures include 20 train accidents at crossings in which damage to railway property exceeded \$100, but which resulted in no reportable casualties as follows: California, 12; Connecticut, 1; Delaware, 2; Illinois, 2; Indiana, 4; Iowa, 1; Kansas, 2; Kentucky, 1; Maryland, 1; Massachusetts, 2; Michigan, 2; Minnesota, 2; Mississippi, 1; Nebraska, 1; New Jersey, 7; New York, 2; North Carolina, 2; Ohio, 1; Oklahoma, 1; Pennsylvania, 2; South Carolina, 2; South Dakota, 1; Texas, 1; Virginia, 2; Washington, 1; West Virginia, 1.

INTERSTATE COMMERCE COMMISSION

TABLE NO. 50.—CASUALTIES IN HIGHWAY GRADE-CROSSING ACCIDENTS, showing ht. of protection afforded at crossing at the time of accident, for the year ended Dec. 31, 1935

		Total		Pedestrians		Passenger automobiles		Motor-buses		Motor-trucks		Motor-cycles or bicyclos		Trolley cars		Animal-drawn vehicles		Other vehicles or machines		Pedestrians passing over or under tracks or cars		All other grade-crossing accidents			
		Number of accidents		Persons		Number of accidents		Persons		Number of accidents		Persons		Number of accidents		Persons		Number of accidents		Persons		Number of accidents		Persons	
		Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured		
1	Not reported																								
2	Classed crossing gates	126	77	87	75	43	23	39	67																
3	Crossing watchman	425	92	285	45	18	25	268	43	43															
4	Audible and visible signal	308	193	434	66	35	13	373	123	314															
5	Audible signal	125	74	149	16	12	3	85	45	118															
6	Visible signal	475	261	325	50	24	10	287	102	287															
7	Other warning signal																								
8	Unprotected	3,628	1,110	2,145	128	79	68	1,057	790	2,432															
9	Total	4,197	1,790	4,009	305	223	130	2,030	1,193	3,736															

		TOTAL-TRAIN AND TRAIN-SERVICE ACCIDENTS																					

TOTAL-TRAIN AND TRAIN-SERVICE ACCIDENTS

1	Not reported																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
---	--------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TRAIN-SERVICE ACCIDENTS

		Struck by train																	
10	Not reported	423	73	56	71	43	34	23	37	34									
11	Crossing watchman	312	86	280	39	18	21	144	30	286									
12	Visible signal	307	140	383	43	34	12	171	88	183	1	10	43	34	80				
13	Audible signal	94	68	91	14	11	3	63	41	72									
14	Other warning signal	328	126	316	81	38	18	278	134	260	1	6	83	38	81	1	1		
15	Unprotected	1,023	847	1,018	118	76	40	1,034	589	1,141	6	12	200	160	200	2	2	1	16
16	Total	2,084	1,384	2,011	234	219	120	1,691	919	1,987	8	28	324	233	347	7	6	1	2
Run into side of train																			
19	Not reported	22	3	28	4		4	17	3	30									
20	Crossing watchman	179	19	287	4		4	182	11	260	3	18	18	7	34	8	1	4	
21	Audible and visible signal	111	26	181	2	1	1	96	30	128									
22	Audible signal	26	6	84	1			26	2	66									
23	Visible signal	113	19	186	3		2	101	14	144									
24	Other warning signal	923	186	1,435	6	1	8	760	161	1,286	5	6	129	39	161	6	4	2	1
25	Unprotected	1,388	269	2,113	23	3	19	1,189	241	1,826	4	21	167	38	219	18	7	12	2

TRAIN ACCIDENTS

		Struck by train																		
30	Not reported																			
30	Closed crossing gates																			
30	Crossing watchman	9	4	17			5	1	9			4	3	8						
31	Audible and visible signal	14	7	10			7	4	4			7	3	6						
31	Audible signal	2	2	2			1	2				1	2	2						
31	Visible signal	16	22	26			7	14	3			6	7	19			1	1	5	
34	Other warning signal																			
34	Unprotected	45	44	43			15	10	13	1	0	4	20	25	25					
36	Total	150	79	98			33	31	28	1	0	4	40	26	61			1	4	5
		Ran into side of train																		
37	Not reported																			
37	Closed crossing gates																			
37	Crossing watchman	4	1	4			5	1	2			2	2							
40	Audible and visible signal	9	3	7			2	1	1			6	2	4	1		1			
41	Audible signal	1		2								1	2	3						
42	Visible signal	5	2	3			1		1			4	2	3						
43	Other warning signal																			
44	Unprotected	20	20	20			19	20	23			11	8	12						
46	Total	48	31	33			33	22	27			24	9	24	1		1			

¹ In addition to the 134 train accidents shown, there were 80 train accidents at highway grade crossings in which the damage to railway property exceeded \$100 but which resulted in no reportable casualties, viz: 11 passenger automobiles, 11 motorbuses, 3 other vehicles, crossing protected by visible signal, 4 passenger automobiles, 1 motor-

resulted in no reportable casualties, viz:

Structure by train:— Crossing unprotected, 10 passenger automobiles, 11 motortrucks, 3 other vehicles; crossing protected by visible signal, 4 passenger automobiles, 1 motorbus, 5 motortrucks, 3 other vehicles; crossing protected by audible signal, 1 passenger automobile, 3 motortrucks; crossing protected by audible and visible signal, 1 passenger automobile, 4 motortrucks; crossing protected by watchman, 3 passenger automobiles, 2 motortrucks; crossing protected by alarm, 1 passenger automobile, 2 motortrucks; crossing protected by flashing lights, 1 passenger automobile, 2 motortrucks; crossing protected by audible and flashing lights, 1 passenger automobile, 2 motortrucks.

[illegible]

Other grade-crossing accident.—Crossing unprotected, 1 obstruction other than a vehicle.

Plaintiffs Exhibit No. 384

Apr. 29, 1941

ACCIDENT BULLETIN No. 105

19

TABLE No. 51.—TRAIN ACCIDENTS and TRAIN-SERVICE ACCIDENTS, and resulting casualties to persons, by States, for the year ended Dec. 31, 1936

No.	State	Per- cent of casual- ties	Train and train-service accidents						Train accidents				Train-service accidents				
			Total		Nontrespassers		Trespassers		Number of acci- dents	Nontrespassers		Trespassers		Nontrespassers		Trespassers	
			Killed	In- jured	Killed	In- jured	Killed	In- jured		Killed	In- jured	Killed	In- jured	Killed	In- jured		
1	Alabama	2.02	121	379	32	274	89	105	97	6	83		1	26	223	80	303
2	Arizona	.00	34	113	11	90	25	14	44		3			11	86	25	14
3	Arkansas	2.02	95	405	32	344	63	61	106	6	70	2	2	26	274	61	53
4	California	4.64	254	897	153	795	105	102	322	9	26	1	7	144	757	164	96
5	Colorado	1.17	51	259	36	215	15	24	108	3	23			33	188		34
6	Connecticut	.71	27	148	8	141	19	7	60		13			8	138	19	7
7	Delaware	.21	10	42	5	40	5	2	21		11			3	39	5	2
8	Florida	1.02	71	182	30	150	32	32	76	5	6			34	144	23	32
9	Georgia	2.40	152	443	71	360	61	63	137	15	60			56	336	51	53
10	Idaho	.30	14	61	3	51	11	10	41		3			3	40	11	10
11	Illinois	9.04	494	1,753	268	1,485	196	153	632	30	100	4	1	300	1,440	154	132
12	Indiana	4.30	287	777	160	704	86	73	372	14	47	4	6	168	637	84	67
13	Iowa	2.14	129	601	77	508	32	35	211	6	34	1		71	330	51	34
14	Kansas	2.19	75	477	42	435	33	44	174	4	21	3	2	26	402	30	43
15	Kentucky	2.43	179	622	60	590	130	123	184	5	8			25	291	130	123
16	Louisiana	1.80	83	364	34	330	47	52	94	6	43		61	26	267	47	51
17	Maine	.34	21	64	14	60	7	7	77	7	9			7	51	7	4
18	Maryland	1.21	41	250	8	238	33	33	168	1	20			7	206	23	33
19	Massachusetts	1.52	68	306	24	285	44	23	122	2	17			22	290	44	30
20	Michigan	3.70	196	726	124	650	54	61	147	4	44			134	613	56	61
21	Minnesota	1.39	82	412	55	345	27	27	173	10	14		1	43	371	37	36
22	Mississippi	1.91	95	379	34	318	64	61	67	46	6		2	31	270	63	50
23	Missouri	3.93	179	603	73	727	96	76	344	4	217	4	3	60	510	90	76
24	Montana	.06	33	136	15	119	19	17	91	4	17	1		11	102	17	17
25	Nebraska	.93	43	167	30	162	13	25	73	2	6		1	26	156	12	25
26	Nevada	.36	18	47	9	36	9	11	55	2	7			7	29	9	11
27	New Hampshire	.17	7	34	4	30	3	4	25	2				2	30	3	4
28	New Jersey	2.79	107	564	50	551	57	31	308	8	42			42	600	57	35
29	New Mexico	.60	29	121	13	97	15	21	37		1	1	2	13	96	14	23
30	New York	5.83	235	1,200	123	1,130	112	79	452	22	60			101	1,080	112	79
31	North Carolina	1.77	130	509	50	451	80	56	105	1	12	1		40	280	79	56
32	North Dakota	.50	20	125	11	113	9	12	41		12			11	101	9	12
33	Ohio	7.10	431	1,327	256	1,196	125	131	666	11	116	3	3	245	1,061	172	130
34	Oklahoma	1.53	105	273	37	231	44	42	87	2	18			25	213	30	42
35	Oregon	.95	46	198	26	165	20	23	66		3		1	26	162	30	32
36	Pennsylvania	7.40	317	1,546	120	1,381	164	185	1,234	19	96		9	110	1,363	186	183
37	Rhode Island	.12	5	25	3	22	2		10	1	3			3	25	3	
38	South Carolina	.26	71	171	28	135	43	36	49	6	14			23	121	40	26
39	South Dak.	.35	12	74	7	65	5	9	30		2			7	42	8	9
40	Tennessee	2.41	132	466	30	357	102	100	156	6	24	1		24	233	101	100
41	Texas	4.64	212	828	64	778	124	160	398	7	60	3	1	77	736	135	130
42	Utah	.48	17	102	7	94	10	8	40		5	1		7	60	9	8
43	Vermont	.26	12	53	4	51	6	2	41	1	3			5	46	6	3
44	Virginia	2.01	118	361	52	302	66	79	166	1	24			31	279	66	79
45	Washin. ton	1.13	52	227	18	196	34	26	100	2	8			16	191	34	27
46	West Virginia	2.34	151	428	32	330	119	94	291	3	25			26	266	119	94
47	Wisconsin	2.27	105	456	55	414	50	42	111	3	20	1	2	60	386	60	60
48	Wyoming	.27	17	51	7	37	10	14	47	3	1			5	46	10	14
49	District of Columbia	.24	4	66	1	50	3	6	19		2			1	66	3	6
50	Total	100.00	5,174	19,502	2,506	17,182	2,664	2,410	8,286	243	1,613	35	34	2,380	12,600	2,421	2,570

COMPARISONS OF CASUALTIES
TO

SUSTAINED IN TRAIN AND TRAIN-SERVICE ACCIDENTS
REPORTED TO THE INTERSTATE COMMERCE COMMISSION
YEARS 1930 TO 1940, INCLUSIVE

[illegible]

Sullivan)

SPASSERS

TION

ENTS
SION

IC LINES)

CASUALTY RATE PER 100 MILLION FREIGHT TRAIN CAR MILES								
TOTAL ALL PERSONS (1)	EMPLOYEES				NON-EMPLOYEES			TOTAL ALL PERSONS (t)
	CONDUCTORS AND BRAKEMEN (m)	ENGINEERS AND FIREMEN (n)	OTHER EMPLOYEES (o)	TOTAL ALL EMPLOYEES (p)	OCCUPANTS OF MOTOR VEHICLES (q)	OTHER NON- TRESPASSERS (r)	TOTAL NON- TRESPASSERS (s)	
5.21	20.28	1.07	1.07	22.42	22.42	2.13	24.55	46.97
7.50	28.12	3.83	1.28	33.23	33.23	2.56	35.79	69.02
4.03	33.80	1.54	-	35.33	27.65	4.61	32.26	67.59
6.17	24.83	3.31	-	28.15	23.18	1.66	24.83	52.98
4.05	23.67	1.39	-	25.06	20.89	-	20.89	45.95
6.21	36.79	-	-	36.79	12.26	-	12.26	49.05
8.72	27.73	1.77	.44	29.95	23.07	1.77	24.85	54.79
5.37	35.35	2.08	-	37.43	28.07	-	28.07	65.50
9.77	36.06	1.90	3.81	43.76	28.54	.95	29.49	73.26
3.45	26.93	2.15	3.23	32.32	42.01	-	42.01	74.33
3.35	17.08	3.01	-	20.10	14.07	5.02	19.09	39.19
4.14	30.15	.91	.91	31.97	20.10	1.83	21.93	53.90

YEARS 1930 TO 1940, INCLUSIVE

SOUTHERN PACIFIC COMPANY (PACIFIC LINES)
LOS ANGELES DIVISION

YEAR	FREIGHT TRAIN		AVERAGE CARS PER TRAIN	CASUALTY RATE PER MILLION FREIGHT TRAIN MILES								CASUALTY R		
				EMPLOYEES				NON-EMPLOYEES				TOTAL ALL PERSONS	EMPLOYEES	
	TRAIN MILES (THOUSANDS)	CAR MILES (THOUSANDS)		CONDUCTORS AND BRAKEMEN	ENGINEERS AND FIREMEN	OTHER EMPLOYEES	TOTAL ALL EMPLOYEES	OCCUPANTS OF MOTOR VEHICLES	OTHER NON- TRESPASSERS	TOTAL NON- TRESPASSERS	CONDUCTORS AND BRAKEMEN		ENGINEERS AND FIREMEN	OTH EMPL
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)
1930	1,745	93,678	53.68	10.89	.57	.57	12.03	12.03	1.15	13.18	25.21	20.28	1.07	1.
1931	1,440	78,237	54.33	15.28	2.08	.69	18.06	18.06	1.39	19.44	37.50	28.12	3.83	1.
1932	1,293	65,094	50.34	17.01	.77	-	17.79	13.92	2.32	16.24	34.03	33.80	1.54	-
1933	1,223	60,401	49.39	12.28	1.64	-	13.90	11.45	.82	12.26	26.17	24.83	3.31	-
1934	1,372	71,817	52.34	12.39	.73	-	13.12	10.93	-	10.93	24.05	23.67	1.39	-
1935	1,526	81,550	53.44	19.66	-	-	19.66	6.55	-	6.55	26.21	36.79	-	-
6 YEARS 1930-1935	8,599	450,777	52.42	14.54	.93	.23	15.70	12.09	.93	13.02	28.72	27.73	1.77	.0
1936	1,781	96,184	54.01	19.09	1.12	-	20.21	15.16	-	15.16	35.37	35.35	2.08	-
1937	1,936	105,111	54.29	20.66	1.03	2.07	23.76	15.50	.52	16.01	39.77	38.06	1.90	3.0
1938	1,588	92,826	58.45	15.74	1.28	1.89	18.89	24.56	-	24.56	43.45	26.93	2.15	3.0
1939	1,670	99,525	59.60	10.18	1.80	-	11.98	8.38	2.99	11.38	23.35	17.08	3.01	-
1940	1,728	109,464	63.35	19.10	.56	.56	20.25	12.73	1.16	13.89	34.14	30.15	.91	.0
5 YEARS 36 1940	8,703	503,110	57.81	17.12	1.15	.92	19.19	15.17	.92	16.09	35.28	29.62	1.99	1.0
11 YEARS 1930-1940	12,302	953,667	55.13	15.84	1.04	.58	17.45	13.64	.92	14.56	32.02	28.72	1.89	1.0

IC LINES)

CASUALTY RATE PER 100 MILLION FREIGHT TRAIN CAR MILES								
TOTAL ALL PERSONS (1)	EMPLOYEES				NON-EMPLOYEES			TOTAL ALL PERSONS (t)
	CONDUCTORS AND BRAKEMEN (m)	ENGINEERS AND FIREMEN (n)	OTHER EMPLOYEES (o)	TOTAL ALL EMPLOYEES (p)	OCCUPANTS OF MOTOR VEHICLES (q)	OTHER NON- TRESPASSERS (r)	TOTAL NON- TRESPASSERS (s)	
5.21	20.28	1.07	1.07	22.42	22.42	2.13	24.55	46.97
7.50	28.12	3.83	1.28	33.23	33.23	2.56	35.79	69.02
4.03	33.80	1.54	-	35.33	27.65	4.61	32.26	67.59
6.17	24.83	3.31	-	28.15	23.18	1.66	24.83	52.98
4.05	23.67	1.39	-	25.06	20.89	-	20.89	45.95
6.21	36.79	-	-	36.79	12.26	-	12.26	49.05
8.72	27.73	1.77	.44	29.95	23.07	1.77	24.85	54.79
5.37	35.35	2.08	-	37.43	28.07	-	28.07	65.50
9.77	38.06	1.90	3.91	43.76	23.54	.95	29.49	73.26
3.45	26.93	2.15	3.23	32.32	42.01	-	42.01	74.33
3.35	17.08	3.01	-	20.10	14.07	5.02	19.09	39.19
4.14	30.15	.91	.91	31.97	20.10	1.83	21.93	53.90
5.28	29.62	1.99	1.59	33.19	26.24	1.59	27.83	61.02
2.02	26.72	1.69	1.05	31.66	24.74	1.68	26.42	58.03

CASUALTIES TO ALL PERSONS EXCEPT TRESPASSERS

YEAR	EMPLOYEES												NON-EMPLOYEES							
	CONDUCTORS AND BRAKEMEN			ENGINEERS AND FIREMEN			OTHER EMPLOYEES			TOTAL ALL EMPLOYEES			OCCUPANTS OF MOTOR VEHICLES			OTHER NON-TRESPASSERS			TOTAL NON-TRESPASSERS	
	KILLED	INJURED	TOTAL	KILLED	INJURED	TOTAL	KILLED	INJURED	TOTAL	KILLED	INJURED	TOTAL	KILLED	INJURED	TOTAL	KILLED	INJURED	TOTAL	KILLED	INJURED
	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)	(t)	(u)
1930	-	19	19	-	1	1	-	1	1	-	21	21	4	17	21	-	2	2	4	1
1931	-	22	22	-	3	3	-	1	1	-	26	26	4	22	26	-	2	2	4	2
1932	1	21	22	-	1	1	-	-	-	1	22	23	1	17	18	-	3	3	1	2
1933	2	13	15	-	2	2	-	-	-	2	15	17	2	12	14	1	-	1	3	1
1934	-	17	17	-	1	1	-	-	-	-	18	18	2	13	15	-	-	-	2	1
1935	1	29	30	-	-	-	-	-	-	1	29	30	-	10	10	-	-	-	-	10
YEARS 30-1935	4	121	125	-	8	8	-	2	2	4	131	135	13	91	104	1	7	8	14	9
1936	-	34	34	-	2	2	-	-	-	-	36	36	4	23	27	-	-	-	4	2
1937	1	39	40	-	2	2	1	3	4	3	44	46	7	23	30	-	1	1	7	2
1938	1	24	25	-	2	2	-	3	3	1	29	30	9	30	39	-	-	-	9	3
1939	1	16	17	-	3	3	-	-	-	1	19	20	3	11	14	-	5	5	3	4
1940	3	30	33	-	1	1	-	1	1	3	32	35	2	20	22	-	2	2	2	2
YEARS 36-1940	6	143	149	-	10	10	1	7	8	7	160	167	25	107	132	-	8	8	25	11
YEARS 0-1940	10	264	274	-	18	18	1	9	10	11	291	302	38	198	236	1	15	16	39	21

SSERS

PARTS OF VEHICLES		NON-EMPLOYEES						TOTAL ALL PERSONS EXCEPT TRESPASSERS		
		OTHER NON-TRESPASSERS			TOTAL NON-TRESPASSERS					
INJURED	TOTAL	KILLED	INJURED	TOTAL	KILLED	INJURED	TOTAL	KILLED	INJURED	TOTAL
(o)	(p)	(q)	(r)	(s)	(t)	(u)	(v)	(w)	(x)	(y)
17	21	-	2	2	4	19	23	4	40	44
22	26	-	2	2	4	24	28	4	50	54
17	18	-	3	3	1	20	21	2	42	44
12	14	1	-	1	3	12	15	5	27	32
13	15	-	-	-	2	13	15	2	31	33
10	10	-	-	-	-	10	10	1	39	40
91	104	1	7	8	14	98	112	18	229	247
23	27	-	-	-	4	23	27	4	59	63
23	30	-	1	1	7	24	31	9	68	77
30	39	-	-	-	9	30	39	10	59	69
11	14	-	5	5	3	16	19	4	35	39
20	22	-	2	2	2	22	24	5	54	59
107	132	-	8	8	25	115	140	32	275	307
198	236	1	15	16	39	213	252	50	504	554

NUMBER OF CASUALTIES SEGREGATED AS TO FREIGHT TRAINS OF 70 CARS OR LESS, AND THOSE OVER 70 CARS

YEAR	CONDUCTORS AND BRAKEMEN		ENGINEERS AND FIREMEN		OTHER EMPLOYEES		ALL EMPLOYEES		OCCUPANTS OF MOTOR VEHICLES		OTHER NON-TRESPASSERS		TOTAL NON-TRESPASSERS		GRAND TOTAL ALL PERSONS	
	70 CARS OR LESS	OVER 70 CARS	70 CARS OR LESS	OVER 70 CARS	70 CARS OR LESS	OVER 70 CARS	70 CARS OR LESS	OVER 70 CARS	70 CARS OR LESS	OVER 70 CARS	70 CARS OR LESS	OVER 70 CARS	70 CARS OR LESS	OVER 70 CARS	70 CARS OR LESS	OVER 70 CARS
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)
1930	13	6	1	-	1	-	15	6	21	-	2	-	23	-	38	6
1931	13	9	1	2	1	-	15	11	20	6	1	1	21	7	36	18
1932	10	12	1	-	-	-	11	12	17	1	1	2	18	3	29	15
1933	7	8	2	-	-	-	9	8	13	1	1	-	14	1	23	9
1934	6	11	-	1	-	-	6	12	15	-	-	-	15	-	21	12
1935	21	9	-	-	-	-	21	9	10	-	-	-	10	-	31	9
5 YEARS 1930-1935	70	55	5	3	2	-	77	38	96	8	5	3	101	11	178	59
1936	20	14	1	1	-	-	21	15	24	3	-	-	24	3	45	18
1937	26	14	1	1	4	-	31	15	26	4	1	-	27	4	56	19
1938	17	8	2	-	3	-	22	8	37	2	-	-	37	2	59	10
1939	14	3	3	-	-	-	17	3	13	1	5	-	18	1	35	4
1940	19	14	1	-	1	-	21	14	19	3	2	-	21	3	42	17
5 YEARS 1936-1940	96	55	8	2	8	-	112	55	119	13	8	-	127	13	239	68
11 YEARS 1930-1940	166	108	13	5	10	-	189	113	215	21	13	3	228	24	417	127

DETAIL OF CASUALTIES
ALL CLASSES OF PERSONS, EXCEPT TRESPASSERS,
TRAIN AND TRAIN SERVICE ACCIDENTS,
ROAD FREIGHT TRAIN OPERATION
REPORTED TO THE INTERSTATE COMMERCE COMMISSION
YEARS 1930 TO 1941 INCLUSIVE.

SOUTHERN PACIFIC COMPANY
LOS ANGELES DIVISION

DATE (a)	LOCATION (b)	MAIN LINE (ML) OR BRANCH (BR) (c)	I.C.C. CLASS (d)	TRAIN NUMBER (e)	NO. CARS IN TRAIN (f)	SPEED (M.P.H.) (g)	PERSON INJURED		ESTIMATED DISABILITY (DAYS) (j)	DESCRIPTION OF ACCIDENT (k)
							NAME (h)	OCCUPATION (i)		
YEAR 1930										
1 1-4	North Los Angeles	ML	S-h	X-2820-W	1	4	1 occupant of automobile		90	Automobile collided with side of car which was being backed to balance of train.
2 1-4	Niland	ML	S-j	X-2788-E	15	Standing	V.D. Richards	Brakeman	45	Brace fell on foot.
3 1-7	Baticoy	BR	S-j	X-2747-W	5	3	P. Garcia	Sec. Foreman	24	While riding on caboose step was struck by tie unloaded from car ahead.
4 1-27	Niland	ML	S-c	X-2451-W	55	Standing	J. Howe	Fireman	21	Lost balance and fell off tender of engine.
5 1-28	Aurant	ML	S-j	X-3737-W	57	10	L.N. Davis	Brakeman	21	Caboose door closed on hand when slack action occurred.
6 2-10	Ventura	ML	S-j	X-2713-W	55	Standing	F.J. Koenig	Brakeman	24	Stumbled and fell while running from exploding gasoline.
7 3-1	Mecca	ML	S-j	X-5020-W	42	8	F.M. Collins	Conductor	8	Stepped on rock while running alongside of train.
8 3-3	El Centro	ML	S-j	X-1619-W	3	Standing	G.T. Knox	Brakeman	21	Strained ligaments in arm while disconnecting brake rigging from derailed car, bar which he was using slipped.
9 3-10	Heber	ML	S-j	X-3757-E	1	Standing	R.K. Meyers	Brakeman	6	Ice chopper fell from car striking brakeman on head.
10 3-12	Vinvale	BR	S-a	142	24	5	A.C. Haney	Brakeman	45	Slipped on damp grass while running alongside train to cut off car.
11 3-23	Los Angeles	ML	S-h	1-96	56	6	2 occupants of automobile		7	Automobile drove off crossing into open tracks and struck by train.
12 3-26	Redlands, 2nd St.	BR	S-d	X-1815-W	5	5	F.E. Millie	Brakeman	30	Thrown off balance when cut, he was riding coupled on to cars on main track.
13 4-26	Aurant	ML	S-h	X-2813-W	55	6	R.B. Cooper	Conductor	45	Emergency stop of train injured employe in caboose when driverless truck and trailer rolled foul of track.
14 5-13	Moving Well	ML	S-j	X-5046-W	98	40	E.T. Camuston M.S. Jandell	Brakeman Conductor	45 8	Rough stop account undesired emergency application of brakes caused injury to employe in caboose.
15 5-15	San Fernando	ML	S-h	252	1	6	2 pedestrians		4 and 30	Walked into pilot beam of engine on crossing, which was handling the car on siding.
16 5-31	Pustin	BR	S-b	X-1809-W	8	Standing	A.J. Bierman	Brakeman	21	Struck by flying air hose while uncoupling air hose.
17 6-6	Downey	BR	S-h	142	20	Standing	Driver of motorcycle		2	Motorcycle collided with side of standing train.
18 7-8	Chatsworth	ML	S-h	X-2820-W	25	6	2 occupants of automobile 1 occupant of automobile		Killed 3	Automobile collided with side of train.
19 7-19	Idio	ML	S-g	X-5002-W	123	3	E.H. Rives	Brakeman	6	Stepped on rock while getting off moving car, 24 cars being handled at the time.
20 7-26	Mira Loma	BR	S-j	X-1768-E	7	2	W.V. Clark	Brakeman	5	Stepped on rock while walking alongside of cut of cars to make coupling.
21 8-11	San Gabriel	ML	S-h	X-3693-W	60	18	Driver of motorcycle		21	Motorcycle collided with side of engine.
22 8-14	Salvia	ML	S-j	128	89	25	F. Soutar	Conductor	24	Thrown off balance in caboose by slack action on rear end.
23 8-19	Mourovia	BR	S-h	X-1828-W	2	3	Driver of motorcycle		7	Motorcycle collided with train.
24 9-2	Alhambra	BR	S-h	X-1761-E	8	18	1 occupant of automobile		21	Automobile struck by train.
25 9-16	Heber	ML	S-h	X-1639-E	2	30	2 occupants of automobile		14 and 21	Automobile struck by train.
26 9-27	Tustin Jct	BR	S-h	140	7	15	1 occupant of auto-truck		7	Auto-truck struck by train.
27 9-28	Beaumont	ML	S-c	X-5000-W	86	6	J.W. Stephens	Brakeman	21	Fifty-sixth car in train buckled and it and car ahead derailed; sudden stop injured employe in caboose.
28 10-10	Idio	ML	S-h	X-5000-W	86	6				

1	1-4	North Los Angeles	ML	S-h	X-2820-W	1	4	1 occupant of automobile	90	Automobile collided with side of car which was being backed to balance of train.	
2	1-4	Wiland	ML	S-j	X-2788-E	15	Standing	V.D. Richards	Brakeman	45	Brace fell on foot.
3	1-7	Saticoy	BR	S-j	X-2747-W	5	3	P. Garcia	Sec. Foreman	24	While riding on caboose step was struck by tie unloaded from car ahead.
4	1-27	Wiland	ML	S-c	X-2451-E	55	Standing	J. Howe	Fireman	21	Lost balance and fell off tender of engine.
5	1-28	Aurant	ML	#S-j	X-3737-E	57	10	L.H. Davis	Brakeman	21	Caboose door closed on hand when slack action occurred.
6	2-10	Ventura	ML	S-j	X-2713-W	55	Standing	F.J. Koenig	Brakeman	24	Stumbled and fell while running from exploding gasoline.
7	3-1	Mecca	ML	S-j	X-5020-W	42	8	F.H. Collins	Conductor	8	Stepped on rock while running alongside of train.
8	3-3	El Centro	ML	S-j	X-1619-E	3	Standing	G.T. Knox	Brakeman	21	Strained ligaments in arm while disconnecting brake rigging from derailed car, bar which he was using slipped.
9	3-10	Heber	ML	S-j	X-3757-E	1	Standing	R.K. Meyers	Brakeman	6	Ice chopper fell from car striking brakeman on head.
10	3-12	Vinvale	BR	S-a	142	24	5	A.C. Haney	Brakeman	45	Slipped on damp grass while running alongside train to cut off car.
11	3-23	Los Angeles	ML	S-h	1-96	56	6	2 occupants of automobile		7	Automobile drove off crossing into open tracks and struck by train.
12	3-26	Redlands, 2nd St.	BR	S-d	X-1815-W	5	5	F.E. Lillis	Brakeman	30	Thrown off balance when cut he was riding coupled on to cars on main track.
13	4-26	Aurant	ML	#S-h	X-2813-W	55	6	R.B. Cooper	Conductor	45	Emergency stop of train injured employee in caboose when driverless truck and trailer rolled foul of track.
14	5-13	Flowing Well	ML	#S-j	X-5046-W	98	40	E.T. Campton M.S. Jandall	Brakeman Conductor	45 8	Rough stop account undesired emergency application of brakes caused injury to employee in caboose.
15	5-15	San Fernando	ML	S-h	252	1	6	2 pedestrians		4 and 30	Walked into pilot beam of engine on crossing, which was handling one car on siding.
16	5-31	Tustin	BR	S-b	X-1809-W	8	Standing	A.J. Bierman	Brakeman	21	Struck by flying air hose while uncoupling air hose.
17	6-6	Downey	BR	S-h	142	20	Standing	Driver of motorcycle		2	Motorcycle collided with side of standing train.
18	7-8	Chatsworth	ML	S-h	X-2820-W	25	6	2 occupants of automobile 1 occupant of automobile		Killed 3	Automobile collided with side of train.
19	7-19	Indio	ML	S-c	X-5002-W	123	3	E.H. Rives	Brakeman	6	Stepped on rock while getting off moving car. 24 cars being handled at the time.
20	7-26	Mira Flores	BR	S-j	X-1768-E	7	2	W.F. Clark	Brakeman	5	Stepped on rock while walking alongside of cut of cars to make coupling.
21	8-11	San Gabriel	ML	S-h	X-3693-W	60	18	Driver of motorcycle		21	Motorcycle collided with side of engine.
22	8-14	Salvia	ML	#S-j	128	89	25	F. Soutar	Conductor	24	Thrown off balance in caboose by slack action on rear end.
23	8-19	Monrovia	BR	S-h	X-1826-W	2	3	Driver of motorcycle		7	Motorcycle collided with train.
24	9-8	Alhambra	BR	S-h	X-1761-E	8	18	1 occupant of automobile		21	Automobile struck by train.
25	9-16	Heber	ML	S-h	X-1639-E	2	30	2 occupants of automobile		14 and 21	Automobile struck by train
26	9-27	Tustin Jct.	BR	S-h	140	7	15	1 occupant of auto-truck		7	Auto-truck struck by train.
27	9-28	Beaumont	ML	#D-c	X-5000-W	86	6	J.W. Stephens	Brakeman	21	Fifty-sixth car in train buckled and it and car ahead derailed; sudden stop injured employee in caboose.
28	10-10	Indio	ML	#S-j	X-5024-W	100	6	C.E. Butler	Brakeman	7	Undesired emergency application of air brakes caused severe slack on rear end of train and injured employee on top of caboose.
29	10-18	Ontario	ML	S-h	2-98	50	18	Occupant of automobile		14	Automobile struck by train.
30	10-29	El Monte	ML	S-h	X-5039-W	47	18	1 occupant of auto-truck 1 occupant of auto-truck		Killed 7	Auto-truck struck by train.
31	11-17	Verdant	BR	S-h	X-1803-E	14	3	H.F. Thompson	Brakeman	30	Knocked down and run over by speeding auto which he attempted to flag.

- Caused by sudden stopping, starting, lurch or jerk of car or train

(Sheet 5 of 16 sheets)

DATE	LOCATION	MAIN LINE (ML) OR BRANCH (BR)	I.C.C. CLASS	TRAIN NUMBER	NO. CARS IN TRAIN	SPEED (M.P.H.)	PERSON INJURED		ESTIMATED DISABILITY (DAYS)	DESCRIPTION OF ACCIDENT
							NAME	OCCUPATION		
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
1930										
YEAR 1930 (Continued)										
11-21	Sevey	BR	S-h	X-2644-W	3	15	2 occupants of automobile		7 and 21	Automobile collided with engine.
11-27	Van Bays	BR	S-h	X-2640-W	10	15	2 occupants of automobile		7 and 60	Automobile struck by train.
12-2	Roscoe	ML	S-h	264	64	30	1 occupant of automobile		Killed	Automobile struck by train.
12-31	Oringo	ML	S-d	X-2704-W	64	Standing	H.J. Wallin	Brakeman	30	Left arm fractured when hand brake suddenly released after being set.
1931										
YEAR 1931										
1-16	Bryn Mawr	ML	S-J	X-5006-W	99	18	H.F. Blake	Brakeman	14	Thrown off balance while stepping down on flat car 32nd from engine when sudden stop occurred due to trespasser stepping on cutting lever.
1-13	Pennam	ML	S-h	X-2544-W	16	Standing	H.C. Johnson	Conductor	7	Struck by automobile while crossing street.
1-20	Spadra	ML	S-h	96	44	10	Occupant of automobile		2	Automobile struck by train.
1-24	Hiland	ML	S-J	X-5026-W	97	10	C.W. Jones I.B. Allen	Brakeman Livestock caretaker	30 3	Brakeman on top of caboose and livestock caretaker in caboose injured by sudden stop caused by emergency application of air brakes due to trespasser stepping on cutting lever.
1-26	Ventura	ML	S-d	X-2719-W	16	Standing	L.M. Miller	Brakeman	10	Struck by brake club when hand brake suddenly released.
2-12	South Pauls	BR	S-d	X-2655-W	16	Standing	D.J. Hyams	Brakeman	45	Lost balance and fell from brake platform of car.
2-15	Heber	ML	S-h	X-1788-W	5	30	3 occupants of automobile		Killed	Automobile struck by train.
2-24	Imperial	ML	S-e	X-5003-W	43	12	P.B. Volgemot	Fireman	6	Burned by hot water from squirt hose.
3-17	Mariboro	BR	S-h	X-1678-W	3	15	Occupant of automobile		14	Automobile collided with side of engine.
4-11	Chatsworth	ML	S-h	X-2806-W	22	Standing	Occupant of automobile		15	Automobile collided with side of train.
4-19	Flowing Well	ML	S-J	X-5002-W	125	20	W.H. Neumann	Brakeman	30	Thrown off balance in caboose due to undesired emergency application of air brakes.
4-22	Imperial	ML	S-J	X-3678-W	27	Standing	A.J. Murphy	Conductor	30	Stepped on rock fracturing bone in foot.
4-25	Whittier	BR	S-h	X-1768-W	3	8	Occupant of automobile		7	Automobile skidded foul of track and struck by train.
5-18	Haymer	ML	S-e	X-2708-W	97	Standing	E.B. Caddy	Fireman	60	Stepped backward while working on main pin, and fell into culvert.
5-24	Ontario	ML	S-h	X-2564-W	6	2	2 occupants of automobile		3 and 7	Automobile collided with side of train.
5-24	Roscoe	ML	S-h	258	75	30	1 occupant of automobile 5 occupants of automobile		Killed 14 to 30	Automobile struck by train.
5-25	Hiland	ML	S-J	X-5020-W	123	8	J.P. McLaughlin G.B. Woodward J.B. Brown	Conductor Brakeman Brakeman	30 30 11	Brakeman threw switch under engine and derailed engine; emergency action of brakes damaged equipment and caused injury to conductor and one brakeman in caboose and one brakeman on top of train.
6-5	Tarboro	BR	S-h	X-2771-W	26	20	2 occupants of automobile		21	Automobile collided with side of train.
6-13	Imperial	ML	S-J	X-5007-W	86	4	S.J. Rice	Brakeman	6	Thrown off balance in caboose due to slack action account train parting when trespasser stepped on cutting lever.
6-19	Iris	ML	S-e	X-5000-W	118	35	C.A. Hunt	Fireman	30	Hot water from squirt hose burned ankle.
6-20	Los Angeles	ML	S-J	X-3676-W	99	10	M.P. Gottfeld	Brakeman	30	Thrown off balance on top of caboose due to slack action of train.
6-28	Roscoe	ML	S-J	264	85	15	G.H. Brundage	Brakeman	30	Thrown off balance into ice bunker of 40th car from caboose by slack action while adjusting ventilator on car.
7-17	Tamul	ML	S-d							

1931		YEAR 1931									
36	1-10	Brya River	HL	80-J	E-5006-W	99	10	H.F.Blake	Brakeman	14	Thrown off balance while stepping down on flat car 32nd from engine when sudden stop occurred due to trespasser stepping on cutting lever.
37	1-13	Pomona	HL	S-h	E-2544-S	16	Standing	H.C.Johnson	Conductor	7	Struck by automobile while crossing street.
38	1-20	Spadra	HL	S-h	96	46	10	Occupant of automobile		2	Automobile struck by train.
39	1-24	Millard	HL	80-J	E-5026-W	97	10	C.W.Jones I.B.Allen	Brakeman Livestock caretaker	30 3	Brakeman on top of caboose and livestock caretaker in caboose injured by sudden stop caused by emergency application of air brakes due to trespasser stepping on cutting lever.
40	1-26	Ventura	HL	S-d	E-2719-S	16	Standing	L.H.Miller	Brakeman	10	Struck by brake club when hand brake suddenly released.
41	2-12	Santa Paula	HL	S-d	E-2655-W	16	Standing	D.J.Hyand	Brakeman	45	Lost balance and fell from brake platform of car.
42	2-15	Reber	HL	S-h	E-1788-S	5	30	3 occupants of automobile		Killed	Automobile struck by train.
43	2-24	Imperial	HL	S-e	E-5002-S	43	12	P.B.Walshamot	Fireman	6	Burned by hot water from squirt hose.
44	3-17	Marlboro	HL	S-h	E-1678-S	3	15	Occupant of automobile		14	Automobile collided with side of engine.
45	4-11	Chatsworth	HL	S-h	E-2806-S	22	Standing	Occupant of automobile		15	Automobile collided with side of train.
46	4-19	Flowing Well	HL	80-J	E-5002-W	125	20	W.H.Husman	Brakeman	30	Thrown off balance in caboose due to undesired emergency application of air brakes.
47	4-22	Imperial	HL	S-J	E-3678-W	27	Standing	A.J.Murphy	Conductor	30	Stepped on rock fracturing bone in foot.
48	4-25	Whittier	HL	S-h	E-1768-W	3	8	Occupant of automobile		7	Automobile skidded foul of track and struck by train.
49	5-18	Raymer	HL	S-e	E-2708-W	97	Standing	E.B.Gaddy	Fireman	60	Stepped backward while working on main pin, and fell into culvert.
50	5-24	Ontario	HL	S-h	E-2564-W	6	2	2 occupants of automobile		3 and 7	Automobile collided with side of train.
51	5-24	Reese	HL	S-h	258	75	30	1 occupant of automobile 5 occupants of automobile		Killed 14 to 30	Automobile struck by train.
52	5-25	Millard	HL	80-J	E-5020-W	123	8	J.P.McLaughlin G.D.Woodward J.B.Brown	Conductor Brakeman Brakeman	30 30 11	Brakeman threw switch under engine and derailed engine; emergency action of brakes damaged equipment and caused injury to conductor and one brakeman in caboose and one brakeman on top of train.
53	6-5	Pomona	HL	S-h	E-2771-S	26	20	2 occupants of automobile		21	Automobile collided with side of train.
54	6-13	Imperial	HL	80-J	E-5001-S	26	4	S.J.Rice	Brakeman	6	Thrown off balance in caboose due to slack action account train parting when trespasser stepped on cutting lever.
55	6-19	Iris	HL	S-e	E-5000-W	118	35	C.A.Hunt	Fireman	30	Hot water from squirt hose burned ankle.
56	6-20	Los Angeles	HL	80-J	E-3676-S	99	10	M.B.Godbold	Brakeman	30	Thrown off balance on top of caboose due to slack action of train.
57	6-28	Reese	HL	80-J	264	85	15	G.H.Brundage	Brakeman	30	Thrown off balance into ice bunker of 40th car from caboose by slack action while adjusting ventilator on car.
58	7-17	Tunnel	HL	S-J	265	64	8	J.D.Chumine	Brakeman	30	Hands and feet burned from heat in tunnel.
59	7-24	Ontario	HL	S-h	E-2821-S	1	8	Occupant of automobile		14	Automobile collided with side of car.
60	8-1	Stim	HL	S-J	E-2655-W	1	8	Non-trespasser		3	Knocked down in car in which he was working when car coupled into by engine.
61	8-5	North Alhambra	HL	S-h	E-1768-S	7	15	Occupant of auto-truck		10	Auto-truck struck by engine handling 2 cars.
62	8-13	Los Angeles	HL	80-d	E-2777-S	61	6	J.H.Weeks	Conductor	45	Three passenger cars rolled out of adjoining track and collided with side of train, derailling 3 cars; sudden stop injured conductor in caboose.
63	9-7	Wilmington	HL	S-h	165	9	10	Occupant of automobile		7	Automobile collided with side of engine.
64	9-30	Chino	HL	S-d	E-1810-W	18	4	B.F.Noon	Brakeman	21	Struck by brake club account hand brake suddenly releasing.
65	10-1	Visalia	HL	S-g	E-1625-S	20	6	C.Belf	Brakeman	45	Fell while boarding car and sprained and bruised right foot.

8 - Covered by sudden stopping, starting, lurch or jerk of car or train.

(Sheet 6 of 16 sheets)

DATE	LOCATION	MAIN LINE (ML) OR BRANCH (BR)	I.C.C. CLASS	TRAIN NUMBER	NO. CARS IN TRAIN	SPEED (M.P.H.)	PERSON INJURED		ESTIMATED DISABILITY (DAYS)	DESCRIPTION OF ACCIDENT
							NAME	OCCUPATION		
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
YEAR 1931 (Continued)										
66 10-7	Marlboro	BR	S-h	X-1787-W	6	Standing	Occupant of automobile		5	Automobile collided with car on crossing.
67 10-9	Aurora	ML	S-h	X-5024-W	56	8	Occupant of automobile		21	Automobile struck by train.
68 11-4	Santa Paula	BR	S-J	X-2809-W	2	Standing	J.W. Highley	Brakeman	7	Cut by piece of wire which he attempted to remove from hand hold of car.
69 11-17	El Rio	ML	S-h	X-3757-W	48	20	2 occupants of automobile		45 and 90	Automobile collided with side of train.
70 11-18	Ontario	ML	S-J	X-2547-W	52	4	D.R. Stipp	Brakeman	5	Lost hand hold and fell off steps of caboose due to slack action on rear end of train.
71 11-20	Pomona	ML	S-h	X-2691-W	3	8	2 occupants of auto-truck		7	Auto-truck collided with cut of cars.
72 11-21	Gorham	ML	S-J	270	52	8	G.G. Hall	Brakeman	11	Struck by rock thrown by trespasser.
73 11-27	Redlands 2nd St.	BR	S-h	X-1810-E	3	4	H.C. Shackford	Brakeman	9	Automobile collided with car on which brakeman was riding.
74 12-14	Los Angeles	ML	S-J	X-3681-W	65	Standing	R. Kerrebrock	Car Inspr.	30	Slipped and fell to ground while jumping from one car to another on adjoining track.
75 12-29	Brawley	ML	S-J	X-2557-E	6	8	G.R. Powers	Brakeman	30	Struck by open door of car on adjoining track.
YEAR 1932										
76 1-7	Falton Wells	BR	S-h	X-1639-W	13	10	Occupant of automobile		Killed	Automobile collided with tender of engine.
77 1-8	Los Angeles	ML	S-J	X-2747-W	74	6	W.W. Lockwood	Brakeman	7	Particle of sand lodged in eye.
78 2-18	Los Angeles	ML	S-e	X-1678-W	58	Standing	J.E. Connor	Engineer	19	Slipped and fell as he stepped down from sand box to apron of engine.
79 2-19	Long Beach	BR	S-h	X-2820-E	3	4	2 occupants of automobile		30	Automobile collided with side of train.
80 2-24	Vineland	BR	S-J	X-1619-E	4	12	A.H. Davison	Brakeman	Killed	Apparently fell from engine of moving train.
81 3-3	Indio	ML	S-J	X-5006-W	100	5	2 livestock caretakers		30 and 90	Trespasser stepped on cut lever, 19th car from head end, causing train to part and undesired emergency application of air brakes injuring men in caboose.
82 3-13	Wynn	ML	S-J	X-5006-W	62	30	R.H. Hayes F.L. Combs	Brakeman Brakeman	Died 15	Knocked off moving train by trespassers.
83 3-24	El Centro	ML	S-J	X-5022-W	125	6	W.W. Cox	Brakeman off duty	12	Trespasser stepped on cut lever causing train to part and slack action on rear injuring deadhead brakeman in caboose.
84 3-25	Falton Wells	BR	S-h	X-1639-W	2	7	Occupant of automobile		90	Automobile collided with tender of engine.
85 3-26	Brawley	ML	S-h	819	7	10	Pedestrian		Died	Struck by train on crossing.
86 4-4	Wickenburg	ML	S-d	X-2704-W	34	Standing	C.C. Burwell	Brakeman	6	Sprained arm setting hand brake.
87 5-7	South Fontana	ML	S-a	X-3737-W	82	Standing	J.A. Coleman	Brakeman	21	Thumb caught in coupler while coupling cars.
88 5-8	Massett	ML	S-g	X-3737-W	79	Standing	B.E. Weeden	Brakeman	11	Stepped on board while getting off train, turning ankle.
89 5-15	Aurora	ML	S-J	822	111	8	F. Soutar	Conductor	21	Undesired emergency application of air brakes due to train parting caused injury to employee in caboose.
90 5-31	Phon	ML	S-h	X-2759-E	28	Standing	Occupant of automobile		30	Automobile collided with side of standing train.
91 6-22	Aurora	ML	S-J	X-5035-W	112	8	C.G. Shaw	Conductor	21	Undesired emergency application of air brakes due to train parting caused by draw bar key falling out of 42nd car, injured employee in caboose.
92 6-24	Calton	ML	S-J	X-5035-W	101	8	D. A. Wooster	Brakeman	6	Due to derailment of engine account engineer overrunning

70	11-18	Ontario	ML	S-J	X-2547-W	52	4	D.R.Stipp	Brakeman	5	Lost hand hold and fell off steps of caboose due to slack action on rear end of train.
71	11-20	Pasadena	ML	S-h	X-2691-W	3	8	2 occupants of auto-truck		7	Auto-truck collided with cut of cars.
72	11-21	Garret	ML	S-J	270	52	8	G.G.Hall	Brakeman	11	Struck by rock thrown by trespasser.
73	11-27	Redlands 2nd St.	BR	S-h	X-1810-E	3	4	H.C.Shackford	Brakeman	9	Automobile collided with car on which brakeman was riding.
74	12-16	Los Angeles	ML	S-J	X-3681-W	65	Standing	R.Kerrebreck	Car Insp.	30	Slipped and fell to ground while jumping from one car to another on adjoining track.
75	12-29	Brawley	ML	S-J	X-2557-E	6	8	G.R.Powers	Brakeman	30	Struck by open door of car on adjoining track.

1932

YEAR 1932

76	1-7	Fulton Wells	BR	S-h	X-1639-W	13	10	Occupant of automobile		Killed	Automobile collided with tender of engine.
77	2-4	Los Angeles	ML	S-J	X-2747-W	74	6	W.W.Lockwood	Brakeman	7	Particle of sand lodged in eye.
78	2-16	Los Angeles	ML	S-e	X-1678-W	58	Standing	J.E.Conner	Engineer	19	Slipped and fell as he stepped down from sand box to apron of engine.
79	2-19	Long Beach	BR	S-h	X-2820-E	3	4	2 occupants of automobile		30	Automobile collided with side of train.
80	2-24	Vinvale	BR	S-J	X-1619-E	4	12	A.H.Davison	Brakeman	Killed	Apparently fell from engine of moving train.
81	3-3	Indie	ML	S-J	X-5006-W	100	5	2 livestock caretakers		30 and 90	Trespasser stepped on cut lever, 19th car from head end, causing train to part and undesired emergency application of air brakes injuring men in caboose.
82	3-18	Myran	ML	S-J	X-5006-W	62	30	R.H.Hayes F.L.Combs	Brakeman Brakeman	Died 15	Knocked off moving train by trespassers.
83	3-19	El Centro	ML	S-J	X-5022-W	125	6	W.W.Cox	Brakeman off duty	12	Trespasser stepped on cut lever causing train to part and slack action on rear injuring deadhead brakeman in caboose.
84	3-25	Fulton Wells	BR	S-h	X-1680-E	2	7	Occupant of automobile		90	Automobile collided with tender of engine.
85	4-26	Brawley	ML	S-h	819	7	10	Pedestrian		Died	Struck by train on crossing.
86	5-4	Wasson	ML	S-d	X-2704-W	34	Standing	C.C.Burwell	Brakeman	6	Sprained arm setting hand brake.
87	5-7	South Fontana	ML	S-a	X-3737-W	82	Standing	J.R.Coleman	Brakeman	21	Thumb caught in coupler while coupling cars.
88	5-8	Beasett	ML	S-g	X-3737-W	79	Standing	B.K.Wooden	Brakeman	11	Stepped on board while getting off train, turning ankle.
89	5-17	Aurant	ML	S-J	822	111	8	F. Soutar	Conductor	21	Undesired emergency application of air brakes due to train parting caused injury to employe in caboose.
90	5-31	Pine	ML	S-h	X-2759-E	28	Standing	Occupant of automobile		30	Automobile collided with side of standing train.
91	6-22	Aurant	ML	S-J	X-5035-W	112	8	C.G.Shaw	Conductor	21	Undesired emergency application of air brakes due to train parting caused by draw bar key falling out of 42nd car, injured employe in caboose.
92	6-26	Colton	ML	S-J	X-5044-W	101	8	D.A.Wooster	Brakeman	6	Sudden stop due to derailment of engine account engineer overrunning derailler in interlocking plant, injured employe who was knocked down on top of 32nd car from caboose.
93	7-4	Beulah Ave.	BR	S-d	X-1761-E	3	Standing	A.J.Murphy	Brakeman	120	Fell off brake platform while releasing hand brake.
94	7-6	West Anaheim	BR	S-J	X-1750-W	38	10	R.Politte	Brakeman	60	Knocked off car to ground by rough coupling during switching.
95	7-8	Indie	ML	S-J	X-5026-W	99	10	W.Q.Orr H.Jones	Brakeman Brakeman	90 and 14	Sudden stop due to air hose blowing off 30th car from engine injured employe in caboose.
96	7-14	Pasadena	BR	S-h	X-2691-W	6	13	Occupant of automobile		3	Automobile struck by train.
97	7-21	Van Nuys	BR	S-h	X-2712-W	60	Standing	Occupant of automobile		14	Automobile collided with side of standing train.
98	7-29	Alhambra	BR	S-h	X-2747-W	1	15	Occupant of automobile		7	Automobile struck by train.
99	7-31	Huntington	ML	S-h	X-2759-E	11	6	2 occupants of automobile		2 and 45	Automobile collided with side of train.
100	8-24	Colton	ML	S-J	X-5017-W	86	20	J.A.Gutton	Brakeman	4	Particle of sand in eye.

S - Caused by sudden stopping, starting, lurch or jerk of car or train

6029

(Sheet 7 of 16 sheets)

DATE (a)	LOCATION (b)	MAIN LINE (ML) OF BRANCH (BR) (c)	I.C.C. CLASS (d)	TRAIN NUMBER (e)	NO. CARS IN TRAIN (f)	SPEED (M.P.H.) (g)	PERSON INJURED		ESTIMATED DISABILITY (DAYS) (j)	DESCRIPTION OF ACCIDENT (k)
							NAME (h)	OCCUPATION (i)		
YEAR 1932 (Cont'd)										
101 9-2	Oxnard	ML	#S-J	X-1831-E	23	4	F. W. Lee	Brakeman	13	Lost hand hold and thrown against dump lever of car due to slack action while switching.
102 9-7	Cabazon	ML	#S-J	826	97	12	A. Wing	Brakeman	7	Thrown off balance on top of rear car in train due to slack action account undesired emergency application of air brakes.
103 9-29	Willmore	BR	S-h	X-2796-E	30	20	Occupant of automobile		15	Automobile collided with side of train.
104 10-9	Camarillo	ML	S-h	X-2777-E	36	Standing	2 occupants of automobile		14 and 21	Automobile collided with side of standing train.
105 10-25	Santa Susana	ML	#S-J	X-3725-E	72	2	E. Stinson	Brakeman	30	Thrown off balance on rear step of caboose due to rough stop.
106 10-25	Puente	ML	S-h	824	61	35	Occupant of automobile		7	Automobile struck by train.
107 11-4	Moorestown	ML	S-h	X-3703-E	57	Standing	Occupant of automobile		5	Automobile collided with side of standing train.
108 11-10	Haber	ML	S-h	820	4	30	Occupant of automobile		2	Automobile struck by train.
109 11-14	Whop	ML	S-J	X-2665-E	43	Standing	J. O'Reilly	Brakeman	21	Finger caught between rerailing frog and bracket on engine.
110 11-17	Delaware	ML	S-J	357	5	Standing	J. H. Pritchard	Brakeman	21	Stepped on rock and sprained ankle.
111 11-17	Delaware	ML	S-E	X-1726-E	1	Standing	R. C. Newton	Brakeman	10	Struck by air hose while uncoupling hose.
112 11-25	San Marcos	ML	S-h	X-5007-E	79	Standing	Occupant of automobile		60	Automobile collided with side of standing train.
113 11-12	Casper	BR	S-h	X-1762-E	3	8	Occupant of automobile		3	Automobile struck by train.
YEAR 1933										
114 1-17	Bartlett	ML	S-J	X-2746-E	15	1	T. C. Kline	Brakeman	30	While adjusting chain between two cars, hand caught between chain and bottom of car as train moved forward.
115 1-17	Northampton	ML	S-E	X-3703-E	62	Standing	D. J. Purcell	Engineer	30	Stepped backward and fell off bridge.
116 1-17	Walton	ML	#S-J	X-5026-E	79	10	R. H. Allen	Brakeman	30	Thrown off balance in caboose due to slack action on rear of train.
117 2-1	Dry Camp	ML	S-h	828	97	16	Occupant of automobile		Killed	Automobile struck by train.
118 2-14	Elftown	BR	S-h	X-1831-E	9	12	Occupant of auto-truck		14	Auto-truck and trailer struck by train.
119 2-15	El Paso	ML	#S-J	X-5048-E	98	1	T. S. Powell	Brakeman	4	Thrown off balance on 20th car from engine and fell to ground as slack was taken to start train.
120 3-25	Ontario	ML	S-J	828	27	Standing	H. H. Hartley	Brakeman	21	Slipped or stumbled and fell while crossing track.
121 4-2	Burbank	ML	S-h	X-3674-E	53	20	Occupant of automobile		Killed	Automobile collided with side of train.
122 4-7	Redlands, 2nd St.	BR	S-h	X-2746-E	None at time	8	Occupant of automobile		4	Automobile struck by engine detached from train at time.
123 4-30	Beaumont	ML	#S-b	828	99	15	J. H. Seale W. A. Wheeler	Conduct. Brakeman	30 30	Branch pipe broke on 4th car from engine, emergency application of brakes causing damage to equipment and injury to employees on caboose.
124 5-15	Brawley	ML	S-E	X-2820-E	12	2	Occupant of automobile	Brakeman	21	Fell off car to ground while setting hand brake as coupling made.
125 5-21	San Jose	ML	S-J	824	84	30	A. J. Faust	Brakeman	15	Foreign substance in eye.
126 5-21	Tracy	ML	S-E	X-1761-E	4	Standing	W. T. Sanders	Conductor	11	Stepped on rock while getting off car.
127 5-21	San Antonio	ML	S-h	X-1662-E	10	25	2 occupants of automobile		14 and 21	Automobile collided with side of engine tender.
128 5-21	Whittier	BR	S-E	X-1662-E	9	10	J. W. Higley	Brakeman	14	Struck by overhead wire while riding on top of train.
129 5-17	San Jose	ML	S-h	X-2734-E	1	20	2 occupants of automobile		7 and 45	Automobile collided with engine tender.

104	10-9	Camarrillo	ML	S-h	X-2777-E	36	Standing	2 occupants of automobile	14 and 21	Automobile collided with side of standing train.
105	10-20	Santa Susana	ML	S-h	X-3725-E	72	2	E. Stinson Brakeman	30	Thrown off balance on rear step of caboose due to rough stop.
106	10-25	Puente	ML	S-h	824	61	35	Occupant of automobile	7	Automobile struck by train.
107	11-4	Moorpark	ML	S-h	X-3703-W	57	Standing	Occupant of automobile	5	Automobile collided with side of standing train.
108	11-10	Heber	ML	S-h	820	4	30	Occupant of automobile	2	Automobile struck by train.
109	11-14	Wahoo	ML	S-j	X-2665-E	43	Standing	M. O'Reilly Brakeman	21	Finger caught between rerailing frog and bracket on engine.
110	11-15	Delano	ML	S-j	357	5	Standing	J.H. Pritchard Brakeman	21	Stepped on rock and sprained ankle.
111	11-15	Delano	ML	S-h	X-1720-W	1	Standing	R.C. Newton Brakeman	10	Struck by air hose while uncoupling hose.
112	11-22	San Gabriel	ML	S-h	X-5007-E	79	Standing	Occupant of automobile	60	Automobile collided with side of standing train.
113	11-12	Gaspar	BR	S-h	X-1762-E	3	8	Occupant of automobile	3	Automobile struck by train.

YEAR 1933

114	1-17	Barstow	ML	S-j	X-2740-E	18	1	T.C. Kline Brakeman	30	While adjusting chain between two cars, hand caught between chain and bottom of car as train moved forward.
115	1-20	Delano	ML	S-h	X-3703-W	62	Standing	D.J. Purcell Engineer	30	Stepped backward and fell off bridge.
116	1-27	Salton	ML	S-j	X-5026-W	79	30	R.H. Allen Brakeman	30	Thrown off balance in caboose due to slack action on rear of train.
117	2-1	Dry Camp	ML	S-h	828	97	16	Occupant of automobile	Killed	Automobile struck by train.
118	2-14	Elftand	MR	S-h	X-1831-E	9	12	Occupant of auto-truck	14	Auto-truck and trailer struck by train.
119	2-13	A. Casco	ML	S-j	X-5040-W	98	1	T.S. Powell Brakeman	4	Thrown off balance on 20th car from engine and fell to ground as slack was taken to start train.
120	3-25	Delano	ML	S-j	828	27	Standing	H.H. Hartley Brakeman	21	Slipped or stumbled and fell while crossing track.
121	4-2	Burbank	ML	S-h	X-3674-W	53	20	Occupant of automobile	Killed	Automobile collided with side of train.
122	4-7	Redlands, 2nd St.	BR	S-h	X-2740-E	None at time	8	Occupant of automobile	4	Automobile struck by engine detached from train at time.
123	4-30	Beaumont	ML	S-h	828	99	14	J.H. Steele Conductor E.A. Wheeler Brakeman	30 30	Branch pipe broke on 4th car from engine, emergency application of brakes causing damage to equipment and injury to employees on caboose.
124	5-12	Prosser	ML	S-h	X-2820-E	12	2	Brakeman	21	Fell off car to ground while setting hand brake as coupling made.
125	5-22	Arret	ML	S-j	824	84	30	R.J. Faust Brakeman	15	Foreign substance in eye.
126	5-25	Prosser	ML	S-h	X-2701-E	4	Standing	E.T. Sanders Conductor	11	Stepped on rock while getting off car.
127	5-27	San Gabriel	ML	S-h	X-1662-W	10	25	2 occupants of automobile	14 and 21	Automobile collided with side of engine tender.
128	5-25	Glitter	MR	S-f	X-1662-E	9	10	J.E. Higley Brakeman	14	Struck by overhead wire while riding on top of train.
129	5-17	Sunny Slope	MR	S-h	X-2734-W	1	20	2 occupants of automobile	7 and 45	Automobile collided with engine tender.
130	5-12	Glendale	ML	S-h	X-1813-E	38	30	Pedestrian	Killed	Apparently fell under passing train at street crossing.
131	5-10	East Anaheim	MR	S-h	X-2519-E	10	8	4 occupants of automobile	15 to 45	Automobile collided with train.
132	10-27	Arret	MR	S-h	X-2578-E	30	Standing	Occupant of automobile	7	Automobile collided with side of standing train.
133	10-20	Arret	ML	S-j	X-5030-E	47	15	F. Soutar Brakeman	15	Thrown off balance in caboose due to severe slack action when train parted account knuckles slipping by between 2nd and 3rd car from engine.
134	11-10	Alhambra	ML	S-j	826	97	14	V.L. Flannery Brakeman	Killed	Apparently fell between cars of moving train while stepping from one car to the other.
135	11-15	San Bernardino	MR	S-h	X-744-W	3	Standing	M.T. Justice Brakeman	11	Dropped switch box cover on foot.
136	11-10	Quartz	MR	S-h	X-1782-E	5	15	Driver of motorcycle	4	Motorcycle ran into side of passing train.
137	11-10	Barstow Det.	MR	S-j	1-814	71	7	F.A. Wedder Conductor	21	Thrown off balance in caboose due to sudden stop of train account broken train line.

- Caused by sudden stopping, starting, lurch or jerk of car or train

140	1-5	Montalvo	BR	S-h	X-1678-W	11	4	2 occupants of automobile	21 and 60	Automobile collided with side of train.
141	1-14	San Bernardino	BR	S-h	X-1788-W	5	Standing	Occupant of automobile	30	Automobile collided with standing car.
142	1-24	Stoneman	ML	S-h	X-1784-W	14	20	Occupant of automobile	5	Automobile struck by train.
143	2-10	Calipatria	ML	S-h	X-1228-W	10	5	Occupant of automobile	7	Automobile collided with side of train.
144	3-15	Indio	ML	S-g	X-5024-W	8	2	G.W.Lacey Brakeman	10	Stepped on rock while getting off car while switching.
145	4-20	Pomona	ML	S-h	X-3697-W	58	3	Occupant of automobile J.W.Higley Brakeman	30 21	Automobile collided with side of engine, uncoupling air hose between engine and tender applying air brakes in emergency, the run-in of slack injuring employe in caboose.
146	5-1	Calipatria	ML	S-j	X-2746-W	19	Standing	J.C.Turner Brakeman	21	Finger caught and crushed while closing car door.
147	5-28	Westminster	BR	S-h	X-1775-W	2	20	Occupant of automobile Occupant of automobile	Killed 30	Automobile struck by train.
148	5-29	Bonney	BR	S-j	X-1632-W	16	Standing	W.H.Wreibelbis Brakeman	7	Strained stomach muscles while lifting heavy box of freight.
149	6-3	Oxnard	ML	S-h	2-812	49	30	Occupant of automobile	Killed	Automobile struck by train.
150	6-23	Santa Barbara	ML	S-h	X-3696-W	5	2	Occupant of automobile	2	Automobile collided with cars being switched.
151	7-4	Loma Linda	ML	S-g	1-832	99	12	J.Sears Fireman	4	Hand slipped off grab iron while boarding engine, bruising shin.
152	7-4	San Fernando	ML	S-h	810	58	20	Occupant of automobile	30	Automobile struck by train.
153	7-4	Santa Susana	ML	S-j	X-3681-W	72	Standing	J.Cowser Brakeman	30	Slipped and fell off bridge while inspecting train.
154	7-7	El Cazo	ML	S-j	X-9032-W	101	15	W.F.Thompson Brakeman	30	Thrown off balance in caboose by slack action and sudden stop of train.
155	7-7	Calipatria	ML	S-j	X-5004-W	79	12	D.F.Morgan Brakeman	7	Thrown off balance in caboose due to undesired emergency application of air brakes.
156	8-5	Woorpark	ML	S-j	X-3696-W	48	6	E. Stinson Brakeman	14	Tripped and fell while running to close switch.
157	8-16	South Fontana	ML	S-h	X-4318-W	18	Standing	Occupant of automobile	14	Automobile collided with side of standing train.
158	8-20	Bloomington	ML	S-j	826	86	30	V.L.Ripley Brakeman	26	Burned by hot water from squirt hose.
159	8-25	Pomona	ML	S-j	X-5021-W	110	6	W.A.Franks Conductor H.F.Faust Brakeman C.Self Brakeman	45 45 30	Trespasser stepping on cutting lever 20 cars from engine after train had pulled out of siding, caused sudden stop injuring two employes in caboose and one on top of 32nd car from caboose.
160	9-6	Sancliff	ML	S-j	X-3742-W	124	4	T.S.Powell Conductor	10	Thrown off balance in caboose by slack action on rear end of train.
161	10-9	Spadra	ML	S-h	X-5039-W	48	35	Occupant of automobile	Killed	Automobile collided with side of train.
162	10-25	Saugus	ML	S-j	815	71	Standing	R.E.Williams Brakeman	28	Stepped in hole while walking alongside of standing train.
163	10-31	Burbank	ML	S-j	X-2520-W	19	10	M.J.Bunavan Brakeman	11	Ran into side of moving automobile while crossing highway.
164	11-25	Ames	ML	S-g	X-5008-W	124	10	W.P.Church Brakeman	14	Stepped on rock while boarding moving train.
165	12-2	Glamis	ML	S-j	X-5040-W	117	2	W.H.Crowwell Conductor	21	Thrown off balance in caboose as train was being started.
166	12-8	Stanton Jet.	BR	S-h	X-1619-W	4	15	Occupant of automobile	2	Automobile struck by train.
167	12-23	El Monte	ML	S-h	628	18	20	Occupant of automobile	14	Automobile collided with engine.
1935										
YEAR 1935										
168	1-1	Reed	ML	S-j	X-5000-W	74	40	E.M.Byrd Brakeman	21	Lost balance and fell against brake wheel on tank car account broken hand rail on car.
169	1-7	Nesquite	ML	S-j	X-5024-W	99	12	M.H.Murphy Brakeman off duty	21	Headhead brakeman in caboose thrown off balance by sudden stop of train due to undesired emergency application of brakes.
170	1-10	Los Angeles	ML	S-j	X-5004-W	61	15	J.W.Higley Brakeman	6	Particle of hot sand lodged in eye.
171	2-9	Pasadena	ML	S-j	814	74	26	C.H.Mathews Brakeman	6	Foreign particles lodged in eye.
172	3-20	Glamis	ML	S-j	X-5022-W	124	30	G.W.Lacey Brakeman	30	Thrown off balance in caboose by sudden stop of train due to undesired emergency application of air brakes.

- Caused by sudden stopping, starting, lurch or jerk of car or train.

(Sheet 9 of 16 sheets)

DATE	LOCATION	MAIN LINE OR BRANCH (ML) (BR)	I.C.C. CLASS (C)	TRAIN NUMBER (T)	NO. CARS IN TRAIN (F)	SPEED (M.P.H.) (S)	PERSON INJURED		ESTIMATED DISABILITY (DAYS) (J)	DESCRIPTION OF ACCIDENT (K)	
							NAME (H)	OCCUPATION (I)			
YEAR 1935 (Cont'd)											
173	3-22	Van Nuys	BR	S-g	X-2544-E	10	6	H.A. Nugent	Brakeman	9	Slipped in wet weeds and grass while getting off moving car.
174	4-13	Scotti	ML	S-h	X-3680-E	51	30	Occupant of automobile		90	Automobile struck by train
175	5-6	Stanton Jet.	BR	M-a	X-1632-E	1	12	2 occupants of auto-truck		7 and 21	Auto-truck and trailer struck by train.
176	5-23	Picoasme Park	BR	S-j	X-2520-W	34	Standing	D.W. McIntyre	Conductor	21	Attached and beaten by unknown assailant.
177	5-28	El Centro	ML	S-g	X-1828-E	None at time	4	B. Morgan	Brakeman	14	Claims stepped on end of tie while getting off pilot of engine.
178	5-29	Oakworth	ML	S-j	X-2544-E	35	Standing	B.M. Proctor	Brakeman	14	Dropped metal running board on foot.
179	6-7	Whittier	BR	S-j	X-1639-W	2	Standing	W.W. Whitney	Brakeman	30	Dropped running board on foot.
180	6-17	West Anaheim	BR	S-h	X-1760-W	11	2	E.H. Witten	Brakeman	Killed	Struck by automobile while flagging crossing.
181	6-23	Neenah	ML	S-j	X-3708-W	46	Unknown	E.H. Rives	Brakeman	21	Tripped over tie wire on car.
182	6-24	Stoneman	ML	S-j	826	96	30	W.H. Hansen	Brakeman	21	Thrown off balance in caboose by slack action of train.
183	6-30	Brylva	ML	S-g	822	76	10	R.A. Graves	Brakeman	60	Fell while getting off moving train.
184	6-30	Pomona	ML	S-h	X-5024-W	58	20	Occupant of auto-truck		90	Auto-truck struck by train.
185	7-2	Glendale	ML	S-h	812	32	25	Occupant of auto-truck		2	Auto-truck and trailer struck by train.
186	7-3	Fillmore	BR	S-g	X-1787-E	None at time	1	J.P. Fowler	Brakeman	21	Foot caught between footboard of engine and ground getting off engine.
187	7-9	Comerville	ML	S-j	X-3669-W	97	30	J.A. Sutton	Brakeman	90	Thrown off balance in caboose by slack action of train.
188	7-13	Neenah	ML	S-a	X-1660-W	4	Standing	J.R. Blankenship	Brakeman	21	Dropped switch lever weight on foot.
189	7-14	Indio	ML	S-1	2-832	76	8	C.L. Kahney	Brakeman	60	Struck and run over by engine detached from train in back-up movement.
190	7-25	Reber	ML	S-j	X-3810-W	12	Standing	C. Bookman	Brakeman	21	Struck on leg by air hose as engine was cut off from cars.
191	8-1	Bloomington	ML	S-d	X-1842-W	30	4	G.A. McCoy	Brakeman	Died	Fell off top of one of 7 cars when collided with balance of train.
192	8-2	South Pasadena	ML	S-d	X-2578-W	7	Standing	I.D. Street	Brakeman	15	Fell from car to ground while releasing hand brake.
193	9-11	Anaheim	BR	S-d	X-1746-E	12	2	C.W. Jones	Brakeman	7	While releasing hand brake, struck by brake club.
194	9-17	Hiland	ML	S-a	X-1726-E	12	Standing	H.E. Jordan	Brakeman	14	Dropped switch lever ball on foot.
195	9-19	Mequite	ML	S-j	824	97	Stepping	S.J. Rice	Brakeman	30	Thrown off balance in caboose cupola as stop made account train flagged by section crew patrolling track due to heavy rain fall.
196	9-30	Los Angeles	ML	S-j	X-2621-E	21	Standing	W.H. Hansen	Brakeman	21	Fell against cupola step while walking through caboose of standing train.
197	10-2	Indio	ML	S-j	X-5036-W	64	6	J.A. Sutton	Brakeman	45	Thrown off balance while riding rear of caboose as stop made.
198	10-4	Portia Jet.	BR	S-h	X-1789-E	26	20	Occupant of automobile		7	Automobile collided with side of engine.
199	10-16	Pomona	ML	S-h	X-2520-E	14	4	Occupant of automobile		15	Automobile collided with engine.
200	10-25	Raymer	ML	S-b	X-2846-E	26	35	2 occupants of auto-truck		7	Auto-truck struck by train.
201	11-17	Glendale	ML	S-j	811	54	25	G.B. Burah	Brakeman	60	Shot by unknown person while riding on top of caboose.
202	12-12	North Hollywood	BR	S-h	X-1746-E	9	20	Occupant of auto-truck		90	Auto-truck collided with side of train moving over crossing.
203	12-23	Los Angeles	ML	S-j	X-4307-W	43	6	L.E. Richardson	Brakeman	21	Knocked off top of caboose by sudden stop of train.
204	12-25	Scotti	ML	S-j	X-2788-E	13	Standing	C. Plummer	Brakeman	6	Struck by rerailing frog which he was handling.
205	12-29	El Centro	ML	S-j	830	19	Standing	B.B. Reeves	Brakeman	21	Sprained back unloading freight from car.

(Sheet 10 of 16 sheets)

DATE (a)	LOCATION (b)	MAIN LINE (M) OR BRANCH (BR) (c)	I.C.C. CLASS (d)	TRAIN NUMBER (e)	NO. CARS IN TRAIN (f)	SPEED (M.P.H.) (g)	PERSON INJURED		ESTIMATED DISABILITY (HRS) (j)	DESCRIPTION OF ACCIDENT (k)	
							NAME (h)	OCCUPATION (i)			
1936											
YEAR 1936 (Cont'd)											
212	4-22	Carmenita	BR	S-h	X-1701-W	28	25	3 occupants of automobile	21 and 60	Automobile collided with side of train	
213	4-24	Arsadia	BR	S-h	X-1782-E	3	18	2 occupants of automobile 1 occupant of automobile 2 occupants of automobile	Killed Died 60	Automobile struck by train	
214	4-30	Burbank	ML	S-h	X-2859-E	15	25	Occupant of automobile	60	Automobile collided with engine.	
215	5-1	Ontario	ML	S-h	X-5042-E	84	20	Occupant of automobile	10	Automobile struck by train.	
216	5-1	Tweedy	BR	S-j	X-2423-E	8	2	A.J. Murphy	Brakeman	28	Stepped on block of wood lying on ground while walking alongside cars.
217	5-2	Indio	ML	S-j	X-5013-W	64	Standing	M.M. Murphy	Brakeman	4	Sprained hand while prodding livestock in car.
218	5-26	Colton	ML	S-d	X-5007-W	58	Standing	L.Y. Pironi	Brakeman	7	Struck by brake club while releasing hand brake.
219	5-29	Colton	ML	S-j	2-832	96	Standing	M.S. Jan Dell	Brakeman	21	Stepped on rock while running to board helper engine.
220	6-16	Edom	ML	S-g	3-832	49	Standing	L.T. Sullivan	Brakeman	10	Fell from side ladder while getting off car in standing train.
221	6-25	Heber	ML	S-g	X-1809-E	2	Standing	W.F. Clark	Brakeman	14	Stepped in depression of ground while getting off standing car.
222	6-29	Keith	BR	S-g	X-2559-E	32	6	M.P. Harde	Brakeman	14	Stepped on rock while running to board moving cars.
223	6-30	Van Nuys	BR	S-c	X-1772-E	54	8	M.J. Crowley	Fireman	6	Thrown off balance in cab of engine as coupling made.
224	7-7	Indio	ML	S-g	X-5041-W	99	Standing	W. McGubbin	Brakeman	90	Fell from side ladder while getting off standing car.
225	7-12	Banning	ML	S-j	830	23	Standing	A.D. Lane	Brakeman	28	Slipped on ladder and fell off standing car.
226	7-28	Knot	ML	S-j	X-5043-W	60	20	L.C. Hart	Brakeman	4	Piece of hot sand lodged in right eye.
227	8-28	Los Angeles	ML	S-j	2-812	74	3	R. Pollette	Brakeman	21	Thrown off balance on top of caboose account sudden stop of train to avoid collision with standing out of cars.
228	9-2	South Fontana	ML	S-j	X-5018-W	74	20	A.C. Haney	Brakeman	20	Fell on top of car due to running board breaking.
229	9-3	Los Angeles	ML	S-i	3-1	5	Standing	Occupant of automobile	21	Automobile ran into standing cars.	
230	9-5	Los Nietos	BR	S-h	X-1658-E	2	8	2 occupants of automobile	30	Automobile ran into side of engine.	
231	9-6	Spadra	ML	S-j	X-5042-W	111	3	C.A. McCullum	Brakeman	28	Thrown from cupola to floor of caboose when undesired emergency application of air brakes occurred.
232	9-27	Onard	ML	S-j	X-1784-E	5	8	F.R. Cowlishaw	Brakeman	21	Thrown off balance and against car as coupling made during switching.
233	10-2	Colton	ML	S-d	X-2451-W	34	Standing	G.J. Abel	Brakeman	5	Fell from car to ground while releasing hand brake.
234	10-8	Los Angeles	ML	S-d	826	83	Standing	W.J. Greene	Brakeman	14	Struck by brake lever while releasing hand brake.
235	10-10	Iris	ML	S-g	822	88	Standing	V.W. Vonseldts	Brakeman	5	Stepped on rock while getting off standing train.
236	10-11	Wiland	ML	S-g	824	86	12	R.R. Robinson	Brakeman	21	Fell while detraining from moving train.
237	10-19	Wiland	ML	S-j	X-5048-W	100	4	R.E. Tolbert	Brakeman	30	Running to third caboose after lining switch, stepped on rock wrenching knee.
238	11-1	West Anaheim	BR	S-h	X-1701-W	6	18	Occupant of automobile	60	Automobile struck by train.	
239	11-5	Burbank	ML	S-h	811	68	Standing	Occupant of automobile	21	Automobile ran into side of standing train.	
240	11-8	Raymer	ML	S-h	1-812	65	15	Occupant of automobile	45	Automobile ran into side of moving train.	
241	11-17	El Cerrito	ML	S-g	X-5024-W	47	10	H.F. Faust	Brakeman	18	Stepped on rock while getting off moving train to close switch.
242	11-19	Iris	ML	S-g	1-822	68	5	L.E. Allen	Brakeman	14	Stepped on rock or uneven ground while getting off moving engine to open switch.

214	4-30	Burbank	ML	S-h	X-2859-E	15	25	Occupant of automobile	60	Automobile collided with engine.
215	5-1	Ontario	ML	S-h	X-5042-E	84	20	Occupant of automobile	10	Automobile struck by train.
216	5-1	Tuesdy	BR	S-J	X-2423-E	8	2	A.J. Murphy Brakeman	28	Stepped on block of wood lying on ground while walking alongside cars.
217	5-2	Indio	ML	S-J	X-5013-W	64	Standing	M.W. Murphy Brakeman	4	Sprained hand while prodding livestock in car.
218	5-28	Colton	ML	S-d	X-5007-W	58	Standing	L.Y. Pironi Brakeman	7	Struck by brake club while releasing hand brake.
219	5-29	Colton	ML	S-J	2-832	96	Standing	M.S. Jan Dell Brakeman	21	Stepped on rock while running to board helper engine.
220	6-16	Eden	ML	S-g	3-832	49	Standing	L.T. Sullivan Brakeman	10	Fell from side ladder while getting off car in standing train.
221	6-25	Heber	ML	S-g	X-1809-E	2	Standing	W.F. Clark Brakeman	14	Stepped in depression of ground while getting off standing car.
222	6-29	Keith	BR	S-g	X-2559-E	32	6	M.P. Harde Brakeman	14	Stepped on rock while running to board moving cars.
223	6-30	Van Nuys	BR	S-c	X-1772-E	54	8	M.J. Croftley Fireman	6	Thrown off balance in cab of engine as coupling made.
224	7-1	Indio	ML	S-g	X-5041-W	99	Standing	W. McCubbin Brakeman	90	Fell from side ladder while getting off standing car.
225	7-12	Banning	ML	S-J	830	23	Standing	A.D. Lane Brakeman	25	Slipped on ladder and fell off standing car.
226	7-28	Knob	ML	S-J	X-5043-W	60	20	L.C. Hart Brakeman	4	Piece of hot sand lodged in right eye.
227	8-28	Los Angeles	ML	S-J	2-812	74	3	R. Pollitte Brakeman	21	Thrown off balance on top of caboose account sudden stop of train to avoid collision with standing out of bars.
228	9-2	South Fontana	ML	S-J	X-5018-W	74	20	A.C. Haney Brakeman	20	Fell on top of car due to running board breaking.
229	9-3	Los Angeles	ML	S-l	3-1	5	Standing	Occupant of automobile	21	Automobile ran into standing bars.
230	9-5	Los Angeles	BR	S-h	X-1658-E	2	8	2 occupants of automobile	30	Automobile ran into side of engine.
231	9-6	Spadra	ML	S-J	X-5042-W	111	30	C.A. McCullum Brakeman	28	Thrown from cupola to floor of caboose when undesired emergency application of air brakes occurred.
232	9-27	Oxnard	ML	S-J	X-1784-E	5	8	F.R. Cowlishaw Brakeman	21	Thrown off balance and against car as coupling made during switching.
233	10-2	Colton	ML	S-d	X-2451-W	34	Standing	G.J. Abel Brakeman	5	Fell from car to ground while releasing hand brake.
234	10-8	Los Angeles	ML	S-d	826	83	Standing	W.J. Greene Brakeman	14	Struck by brake lever while releasing hand brake.
235	10-10	Iris	ML	S-g	822	88	Standing	V.W. VonSeldets Brakeman	5	Stepped on rock while getting off standing train.
236	10-11	Wiland	ML	S-g	824	86	12	R.R. Robinson Brakeman	21	Fell while detraining from moving train.
237	10-19	Wiland	ML	S-J	X-5048-W	100	4	R.E. Tolbert Brakeman	30	Running to board caboose after lining switch, stepped on rock wrenching knee.
238	11-1	West Anaheim	BR	S-h	X-1701-W	6	18	Occupant of automobile	60	Automobile struck by train.
239	11-5	Burbank	ML	S-h	811	68	Standing	Occupant of automobile	21	Automobile ran into side of standing train.
240	11-8	Haymer	ML	S-h	1-812	65	15	Occupant of automobile	45	Automobile ran into side of moving train.
241	11-17	El Cacao	ML	S-g	X-5024-W	47	10	H.F. Faust Brakeman	18	Stepped on rock while getting off moving train to close switch.
242	11-19	Iris	ML	S-g	1-822	68	5	L.E. Allen Brakeman	14	Stepped on rock or uneven ground while getting off moving engine to open switch.
243	11-19	Colton	ML	S-J	X-5036-W	52	15	J.J. Breen Conductor J.T. Curley Brakeman	4 19	Sudden stop of train while switching for water caused injury to employee in caboose.
244	11-24	Oxnard	ML	S-d	X-2557-E	3	4	J.E. Harmon Brakeman	30	While setting hand brake, car fell off car as coupling made.
245	11-24	Indio	ML	S-g	X-5020-W	59	20	W.A. Boyd Conductor	21	Fell to ground while boarding cars of moving train.
246	11-25	Santa Paula	BR	S-d	X-2711-W	7	4	L. Foster Brakeman	21	Knocked off car by rock lead conveyor while releasing hand brake.
247	11-26	San Gabriel	ML	S-h	X-5046-E	67	30	Occupant of automobile	10	Automobile struck by train.
248	12-4	Alhambra	ML	S-h	X-1734-W	49	15	Occupant of automobile	4	Automobile ran into side of engine.
249	12-9	Alhambra	ML	S-h	828	33	30	Occupant of automobile	60	Automobile ran into side of moving train.
250	12-9	South Fontana	ML	S-J	X-5005-W	77	30	E. Jennings Brakeman	14	Train parted 35 cars ahead of caboose due to yoke strap failing, emergency application of brakes on engine caused injury to employee in caboose.

- Caused by sudden stopping, starting, lurch or jerk of car or train

(Sheet 11 of 16 sheets)

DATE	LOCATION	MAIN LINE (ML) - OR BRANCH (BR)	I.C.C. CLASS	TRAIN NUMBER	NO. CARS IN TRAIN	SPEED (M.P.H.)	PERSON INJURED		ESTIMATED DISABILITY (DAYS)	DESCRIPTION OF ACCIDENT
							NAME	OCCUPATION		
1936										
YEAR 1936 (Cont'd)										
12-10	Massell	ML	S-h	X-2452-W	2	20	1 occupant of Automobile 2 occupants of automobile		Killed 21 and 60	Automobile struck by train
12-14	Pomona	ML	S-h	828	24	8	2 occupants of automobile		4 and 28	Automobile struck by train.
12-14	Colton	ML	S-1	1-832	77	1	L.H.White	Engineer	60	Left foot severed above ankle, run over by engine detached from train when he fell running to board engine which was being moved by fireman
12-17	Kovet	BR	S-h	X-2557-W	7	18	Occupant of auto-truck		Died	Auto-truck struck by train.
12-25	Ventura	ML	S-g	1-812	74	10	L.T.Sullivan	Brakeman	6	Fell while attempting to board caboose of moving train.
12-28	Pomona	ML	S-h	X-5012-W	90	20	Occupant of auto-truck		7	Auto-truck struck by train.
12-28	Colton	ML	S-j	830	51	Standing	J.W.Clark	Brakeman	14	Slipped on side ladder and fell from car to ground.
1937										
YEAR 1937										
1-4	Palton Wells	BR	S-h	X-1736-E	2	Standing	2 occupants of auto-truck		90	Truck and trailer ran into side of train.
1-5	Rockhill	ML	S-h	X-1761-E	1	20	Occupant of automobile		Killed	Automobile struck by train.
1-7	Redlands	ML	S-j	819	9	Standing	H.L.St.Clair	Brakeman	7	Slipped on damp car roof and fell off top of car of standing train.
1-14	Rowitt	ML	S-b	3-1	23	Standing	J.Hernandez	Brakeman	5	Burned by hot water and steam while opening steam hose valve.
1-16	El Centro	ML	S-h	X-1830-W	9	6	Occupant of automobile		14	Automobile struck by train.
1-20	Ontario	ML	S-h	X-2746-E	3	3	Occupant of automobile		14	Automobile ran into side of train.
1-25	Orange	ML	S-g	X-3348-E	14	1	H.Cornwall	Brakeman	5	Stepped in hole while getting off train.
1-25	Chico	ML	S-j	X-5036-W	62	Standing	J.A.Button	Conductor	12	Foreign particles lodged in eye.
1-28	Ardenia	BR	S-h	X-1835-E	4	15	Occupant of automobile		14	Automobile struck by train
2-4	Colton	ML	S-h	X-1828-W	30	10	Occupant of automobile		Killed	Automobile ran into side of engine.
2-26	Chard	ML	S-g	X-2551-E	25	3	R.F.Bagg	Brakeman	4	Turned ankle getting off moving car while switching.
3-4	Los Angeles	ML	S-b	3-1	24	Standing	W.M.Black	Car Insp.	Killed	Caught between cars as slack bunched.
3-15	Aiken	ML	S-b	X-3707-W	111	25	R.T.Aird	Conductor	4	Failure of barrier iron allowed trestle to drop from 10th car from engine, part drain and derailed 2 cars, sudden stop injured employee in caboose.
3-23	Villa Park	BR	S-h	X-1814-E	1	18	Occupant of automobile		7	Automobile ran into side of engine.
3-24	Brawley	ML	S-h	X-1707-E	3	4	W.Sullivan	Conductor	28	Automobile struck by train injuring conductor who was riding front end of engine.
4-4	Colton	ML	S-g	3-836	63	15	E.Wittfeldt	Brakeman	9	Fell attempting board moving train account losing hand hold due to speed accelerating quickly account run out of slack.
4-4	Pirbright Park	BR	S-h	X-2813-E	3	15	Occupant of automobile		Died	Automobile struck by train.
4-7	Pomona	ML	S-j	X-2799-W	24	Standing	O.M.Prescoe	Brakeman	45	Struck by missile thrown by unknown person.
4-15	Calipatria	ML	S-h	X-1760-E	7	4	Occupant of automobile		30	Automobile ran into engine.
4-16	Southgate	BR	S-j	X-1798-E	5	9	R.Pallitte	Brakeman	60	Fell from top of car to ground when cars coupled while switching.
4-17	Harod	ML	S-1	824	68	20	C.E.Smith	Brakeman	Killed	Apparently fell against side of train passing on parallel track.
4-24	Hiland	ML	S-j	X-5012-E	70	4	J.Gebhart	Carpenter off duty	21	Thrown off balance in outfit car by sudden stop of train.
4-29	El Centro	ML	S-j	X-1794-W	None at time	Standing	H.L.Kruger	Brakeman	21	Burned by hot water and steam from engine.

154	12-17	Levet	ML	S-g	1-812	74	10	L.T.Sullivan	Brakeman	6	Fell while attempting to board caboose of moving train.
155	12-25	Ventura	ML	S-h	X-5012-W	90	20	Occupant of auto-truck		7	Auto-truck struck by train.
156	12-26	Pennock	ML	S-j	820	51	Standing	J.W.Clark	Brakeman	14	Slipped on side ladder and fell from car to ground.
YEAR 1937											
157	1-4	Paltan Wells	ML	S-h	X-1736-E	2	Standing	2 occupants of auto-truck		90	Truck and trailer ran into side of train.
158	1-5	Newhall	ML	S-h	X-1761-E	1	20	Occupant of automobile		Killed	Automobile struck by train.
159	1-7	Redlands	ML	S-j	819	9	Standing	H.L.St.Clair	Brakeman	7	Slipped on damp car roof and fell off top of car of standing train.
160	1-14	Novitt	ML	S-b	3-1	23	Standing	J.Harrison	Brakeman	5	Burned by hot water and steam while opening steam hose valve.
161	1-18	El Centro	ML	S-b	X-1830-W	9	6	Occupant of automobile		14	Automobile struck by train.
162	1-20	Ontario	ML	S-h	X-2746-W	3	3	Occupant of automobile		14	Automobile ran into side of train.
163	1-25	Orange	ML	S-g	X-3308-E	14	1	H.Oswald	Brakeman	5	Stepped in hole while getting off train.
164	1-29	Chico	ML	S-j	X-5036-W	62	Standing	J.A.Button	Conductor	12	Foreign particle lodged in eye.
165	1-28	Arcadia	ML	S-h	X-1835-E	4	15	Occupant of automobile		14	Automobile struck by train.
166	2-8	Calverton	ML	S-h	X-1828-W	30	10	Occupant of automobile		Killed	Automobile ran into side of engine.
167	2-26	Orange	ML	S-g	X-2551-E	25	3	R.F.Sugg	Brakeman	4	Turned ankle getting off moving car while switching.
168	3-4	Los Angeles	ML	S-b	3-1	24	Standing	W.M.Black	Car Insp.	Killed	Caught between cars as slack bunched.
169	3-12	Allan	ML	S-b	X-3707-W	111	25	R.T.Aird	Conductor	4	Failure of carrier iron allowed drawbar to drop from 10th car from engine, part train and derailed 2 cars, sudden stop injured employee in caboose.
170	3-23	Villa Park	ML	S-h	X-1814-E	1	18	Occupant of automobile		7	Automobile ran into side of engine.
171	3-24	Brawley	ML	S-h	X-1707-E	3	4	W.Sullivan	Conductor	28	Automobile struck by train injuring conductor who was riding front end of engine.
172	4-4	Chico	ML	S-g	3-836	63	15	E.Wittfeldt	Brakeman	9	Fell attempting board moving train account losing hand hold due to speed accelerating quickly account run out of slack.
173	4-4	Firestone Park	ML	S-b	X-2813-E	3	15	Occupant of automobile		Died	Automobile struck by train.
174	4-7	Pennock	ML	S-j	X-2799-W	24	Standing	O.M.Preece	Brakeman	45	Struck by missile thrown by unknown person.
175	4-13	Calipatria	ML	S-h	X-1760-E	7	4	Occupant of automobile		30	Automobile ran into engine.
176	4-16	Southgate	ML	S-j	X-1798-E	5	9	R.Pellitte	Brakeman	60	Fell from top of car to ground when cars coupled while switching.
177	4-17	Merced	ML	S-i	824	68	20	C.E.Smith	Brakeman	Killed	Apparently fell against side of train passing on parallel track.
178	4-26	Elmer	ML	S-j	X-5012-E	70	4	J.Cobbart	Carpenter off duty	21	Thrown off balance in outfit car by sudden stop of train.
179	4-27	El Centro	ML	S-j	X-1794-W	None at time	Standing	R.L.Kruger	Brakeman	21	Burned by hot water and steam from injector while rerailing engine.
180	5-4	Twinsburg	ML	S-j	X-1798-W	16	3	C.R.Passino	Brakeman	13	Caught between and knocked off side-swiped car.
181	5-8	Redlands 2nd St.	ML	S-d	X-1879-E	4	Standing	W.G.Gates	Brakeman	21	Strained back while releasing hand brake on car.
182	5-8	Lincoln	ML	S-d	X-2711-E	11	7	H.W.Morgan	Brakeman	8	Struck by brake club while releasing hand brake.
183	5-8	Chickworth	ML	S-i	2-812	59	12	C.B.Cortes	Sec.Laborer	28	Struck by engine of train.
184	5-23	Elmer	ML	S-j	X-5032-W	123	2	W.A.Jordan	Conductor	21	Thrown off balance in caboose by slack action rear of train.
185	5-24	Reese	ML	S-o	X-2804-E	44	Standing	B.W.Bioderman	Brakeman	21	Dropped switch lever ball on foot.
186	5-27	Ontario	ML	S-g	X-2559-W	14	2	B.A.Reeves	Brakeman	21	Foot slipped getting off footboard of engine.
187	5-31	Los Angeles	ML	S-h	X-1810-W	4	3	Occupant of automobile		21	Automobile ran into side of train.

- Caused by sudden stopping, starting, lurch or jerk of car or train

DATE (a)	LOCATION (b)	MAIN LINE (ML) OR BRANCH (BR) (c)	I.C.C. CLASS (d)	TRAIN NUMBER (e)	NO. CARS IN TRAIN (f)	SPEED (M.P.H.) (g)	PERSON INJURED		ESTIMATED DISABILITY (DAYS) (j)	DESCRIPTION OF ACCIDENT (k)	
							NAME (h)	OCCUPATION (i)			
YEAR 1937 (Cont'd)											
289	6-10	Brawley	ML	S-J	X-1721-W	3	2	A. O. Laughlin	Fireman	30	Thrown off balance on top of car as coupling made switching.
290	6-17	El Centro	ML	S-J	X-1736-E	None at time	Unknown	H.R. Bowles	Brakeman	11	Foreign particle lodged in eye.
291	6-17	Rosemead	ML	S-J	X-2849-E	55	7	F.L. Combs	Brakeman	5	Thrown off balance as coupling made while switching.
292	6-22	Indio	ML	S-J	X-2746-E	1	8	J.M. Kelly	Brakeman	4	Sprained ankle while stepping on cut lever to uncouple caboose from engine.
293	6-28	El Centro	ML	S-J	X-2713-E	21	8	G.F. Frey	Brakeman	14	Sudden stop when engineer applied brakes in emergency caused brakeman to be thrown off balance on caboose and to ground.
294	7-8	Dryden	ML	S-G	X-5025-W	122	8	E.F. Donahue	Brakeman	90	Foot caught under wheel while boarding head end of caboose of moving train.
295	7-9	Ontario	ML	S-h	X-2727-W	2	2	2 occupants of automobile		14 and 90	Automobile ran into side of train.
296	7-12	Indio	ML	S-d	X-1739-W	2	Standing	J.E. Harmon	Brakeman	21	Lost balance and fell from car when brake staff bent while setting hand brake.
297	7-13	Bertram	ML	S-J	X-5018-W	119	20	G.L. Oswald	Brakeman	7	Thrown off balance in caboose due to sudden stop when train parted account drawbar pulling out car behind engine.
298	7-14	Brawley	ML	S-J	X-1736-W	8	4	F.F. George	Brakeman	45	Lost balance and fell off car as coupling made.
299	7-14	Wilmington	ML	S-J	X-5039-W	124	5	J.E. Finley	Brakeman	21	Foot slipped off end of tie while running to board caboose.
300	7-16	North Los Angeles	ML	S-G	X-2559-W	75	6	L.E. Richardson	Brakeman	16	Slipped on ballast shoulder while getting off train.
301	7-17	Los Angeles	BR	S-J	X-1801-W	72	8	H.E. Miller	Brakeman	60	Sudden stop of train to avoid striking automobile, caused brakeman who was on top of train about 20 cars ahead of caboose to fall to the ground.
302	7-18	Chatsworth	ML	S-h	X-3734-W	56	Standing	Occupant of automobile		2	Automobile ran into side of standing train.
303	7-20	Pomona	ML	S-h	X-2540-E	37	3	Occupant of automobile		3	Automobile struck by train.
304	8-6	Hayward	ML	S-a	X-3680-W	49	30	Occupant of automobile		6	Automobile ran into side of train.
305	8-14	Indio	ML	S-J	X-5032-E	123	6	J.F. Keshower	Brakeman	10	Thrown off balance in caboose when train parted due to trespasser stepping on cutting lever.
306	8-17	Aurant	ML	S-J	X-3734-W	86	20	J.E. Patterson	Engineer	6	Foreign particle lodged in eye.
307	8-25	Firestone Park	BR	S-h	X-1810-W	40	15	Occupant of auto-truck		7	Auto-truck and trailer struck by train.
308	8-30	Peacocks	ML	S-h	811	70	25	Occupant of automobile Occupant of automobile		Killed 21	Automobile struck by train.
309	9-3	Alhambra	BR	S-h	X-1773-E	3	12	2 occupants of automobile		7	Automobile struck by train.
310	9-4	Chatsworth	ML	S-J	1-812	84	20	J.F. Peasey	Brakeman	14	Fell to ground from flat car in moving train.
311	9-21	Normal	BR	S-h	X-1678-W	27	15	Occupant of automobile Occupant of automobile		Killed 30	Automobile ran into side of train.
312	10-3	North Hollywood	BR	S-h	X-1707-E	7	3	Occupant of automobile		Killed	Automobile ran into side of engine.
313	10-7	Dry Camp	ML	S-J	1-836	67	25	B.L. Dillon	Brakeman	20	Missed monkey (horizontal) bar and fell to floor while crossing from one side of caboose cupola to other.
314	10-15	Quincy	ML	S-e	2-2	25	Standing	C.A. Kelsey	Fireman	28	Finger caught between water spout and edge of tender manhole.
315	10-17	Worcester	ML	S-G	X-3724-E	58	8	H.H. Bradshaw	Brakeman	21	While boarding train, slipped on ballast and fell.
316	10-17	Firestone Park	BR	S-h	X-810-E	73	Standing	2 occupants of automobile		4 and 7	Automobile ran into side of standing train.
317	10-21	Wilmington	ML	S-J	X-5039-W	124	5	J.E. Finley	Brakeman	21	Foot slipped off end of tie while running to board caboose.

293	6-28	El Centro	ML	#S-J	X-2713-W	21	8	G.F.Frey	Brakeman	14	Sudden stop when engineer applied brakes in emergency caused brakeman to be thrown off balance on caboose and to ground.
294	7-8	Drylyn	ML	S-g	X-5025-W	122	8	E.F.Donahue	Brakeman	90	Foot caught under wheel while boarding head end of caboose of moving train.
295	7-9	Ontario	ML	S-h	X-2727-W	2	2	2 occupants of automobile		14 and 90	Automobile ran into side of train.
296	7-12	Indio	ML	S-d	X-1739-W	2	Standing	J.E.Hammon	Brakeman	21	Lost balance and fell from car when brake staff bent while setting hand brake.
297	7-13	Bertram	ML	#S-J	X-5018-W	119	20	G.L.Oswald	Brakeman	7	Thrown off balance in caboose due to sudden stop when train parted account drawbar pulling out car behind engine.
298	7-14	Brawley	ML	S-J	X-1736-W	8	4	F.V.George	Brakeman	45	Lost balance and fell off car as coupling made.
299	7-14	Niland	ML	S-J	X-5039-W	124	5	J.E.Finley	Brakeman	21	Foot slipped off end of tie while running to board caboose.
300	7-16	North Los Angeles	ML	S-g	X-2559-W	73	6	L.E.Richardson	Brakeman	16	Slipped on ballast shoulder while getting off train.
301	7-17	Los Angeles	BR	#S-J	X-1801-W	72	8	H.E.Miller	Brakeman	60	Sudden stop of train to avoid striking automobile, caused brakeman who was on top of train about 20 cars ahead of caboose to fall to the ground.
302	7-18	Chatsworth	ML	S-h	X-3734-W	56	Standing	Occupant of automobile		2	Automobile ran into side of standing train.
303	7-20	Pomona	ML	S-h	X-2540-E	37	3	Occupant of automobile		3	Automobile struck by train.
304	8-6	Raymer	ML	W-a	X-3680-W	49	30	Occupant of automobile		6	Automobile ran into side of train.
305	8-16	Indio	ML	#S-J	X-5032-E	123	6	J.F.Eshenower	Brakeman	10	Thrown off balance in caboose when train parted due to trespasser stepping on cutting lever.
306	8-17	Aurant	ML	S-J	X-3734-W	86	20	J.E.Patterson	Engineer	6	Foreign particle lodged in eye.
307	8-25	Firestone Park	BR	S-h	X-1810-W	40	15	Occupant of auto-truck		7	Auto-truck and trailer struck by train.
308	8-30	Pacoima	ML	S-h	811	70	25	Occupant of automobile Occupant of automobile		Killed 21	Automobile struck by train.
309	9-3	Alhambra	BR	S-h	X-1773-E	3	12	2 occupants of automobile		7	Automobile struck by train.
310	9-4	Chatsworth	ML	S-J	1-812	84	20	J.F.Faney	Brakeman	14	Fell to ground from flat car in moving train.
311	9-11	Northwalk	BR	S-h	X-1678-W	27	15	Occupant of automobile Occupant of automobile		Killed 30	Automobile ran into side of train.
312	10-3	North Hollywood	BR	S-h	X-1707-E	7	3	Occupant of automobile		Killed	Automobile ran into side of engine.
313	10-7	Dry Camp	ML	S-J	1-836	67	25	D.L.Dillon	Brakeman	20	Missed monkey (horizontal) bar and fell to floor while crossing from one side of caboose cupola to other.
314	10-15	Oniad	ML	S-g	2-2	25	Standing	C.A.Kelsey	Fireman	28	Finger caught between water spout and edge of tender manhole.
315	10-17	Moorpark	ML	S-g	X-3724-E	58	8	H.H.Bradsaw	Brakeman	21	While boarding train, slipped on ballast and fell.
316	10-17	Firestone Park	BR	S-h	X-1810-E	73	Standing	2 occupants of automobile		4 and 7	Automobile ran into side of standing train.
317	10-21	Niland	ML	#S-J	X-5025-W	124	8	A.E.Mason	Conductor	21	Knocked off balance on rear platform of caboose by sudden stop due to trespasser stepping on cut lever, parting train.
318	10-22	Calexico	ML	S-d	X-1828-W	11	4	W.A.Franks	Conductor	60	Fell to ground from brake platform while setting hand brake on car.
319	10-31	Los Angeles	ML	S-g	811	66	15	J.A.McGee	Conductor	60	Missed footing and fell while boarding caboose of moving train.
320	11-3	Camrillo	ML	S-i	X-3690-E	74	25	2 occupants of automobile		Killed	Automobile struck by train on private crossing.
321	11-8	Santa Ana	BR	S-h	X-1658-W	12	20	Occupant of automobile		60	Automobile struck by train.
322	11-10	Aras	ML	S-d	X-5005-E	81	4	W.E.Allbright	Brakeman	21	Brake chain slipped while setting hand brakes on car.
323	11-19	Ventura	ML	S-h	X-1760-W	10	15	Occupant of automobile		30	Automobile struck by train.
324	11-23	Bloomington	ML	#S-J	828	77	25	C.C.Koonts	Brakeman	14	Lost balance due to motion of train and fell while getting out of caboose cupola.
325	12-28	South Fortuna	ML	#S-J	X-5017-E	706	10	G.W.Lacey H.S.Bolster	Brakeman Brakeman	14 14	Thrown off balance on platform against rear of caboose by slack action when train parted due to trespasser stepping on cut lever.

- Caused by sudden stopping, starting, lurch or jerk of car or train

(Sheet 13 of 16 sheets)

	DATE	LOCATION	MAIN LINE (ML) OR BRANCH (BR)	I.C.C. CLASS	TRAIN NUMBER	NO. CARS IN TRAIN	SPEED (M.P.H.)	PERSON INJURED		ESTIMATED DISABILITY (DAYS)	DESCRIPTION OF ACCIDENT
								NAME	OCCUPATION		
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
	1934										YEAR 1938
326	1-4	North Los Angeles	ML	S-h	2-2	19	50	Occupant of automobile Occupant of automobile		Killed 60	Automobile ran into side of train
327	1-15	Alhambra	ML	S-h	X-2746-E	4	15	Occupant of automobile		21	Automobile struck by train.
328	1-26	Reese	ML	E-g	813	66	3	R.A. Williams	Brakeman	21	Ladder rung came loose while climbing up side of car.
329	1-31	Moogpark	ML	S-h	1-812	52	25	Occupant of automobile		30	Automobile ran into side of train.
330	2-9	North Alhambra	BR	S-h	X-2577-E	2	10	Occupant of automobile		7	Automobile ran into side of engine.
331	2-10	Seague	ML	S-e	815	67	Standing	W.S. Brown	Brakeman	4	Strain while operating switch lever.
332	2-14	Spadra	ML	S-g	X-5025-W	58	2	W.E. Drabielbis B.B. Reeves	Conductor Brakeman	18 60	Thrown off balance in caboose when engineer made emergency stop to avoid running through switch.
333	2-18	Van Nuys	BR	S-h	X-2446-W	14	20	Occupant of automobile Occupant of automobile		Killed 7	Automobile ran into side of engine.
334	2-23	Banning	ML	S-g	X-2842-E	20	5	J.E. Harris	Brakeman	45	Stepped on rock while getting off moving car.
335	2-24	Redlands, 2nd St.	BR	S-h	X-2559-E	9	10	Occupant of automobile		21	Automobile ran into side of engine.
336	2-25	Monrovia	BR	S-h	X-2746-E	2	15	Occupant of automobile Occupant of automobile		Killed 30	Automobile ran into side of engine.
337	3-20	Lagol	ML	S-j	X-3723-W	74	35	D.M. Payne	Brakeman	14	Struck by water box falling from engine tender while standing in gangway.
338	3-24	Hayner	ML	S-h	X-2580-W	75	35	Occupant of auto-truck		6	Auto-truck ran into side of train.
339	3-26	Barad	ML	S-g	X-4307-W	56	10	M.S. Jan Dell	Brakeman	21	Twisted foot while getting off moving train to close switch.
340	4-8	Indio	ML	S-d	X-5032-W	123	Standing	C.W. White	Brakeman	6	Strained back setting hand brake on car.
341	4-24	Sepulveda	ML	S-h	X-4103-E	53	25	Occupant of automobile		Killed	Automobile struck by train.
342	5-19	Pomona	ML	S-h	830	21	3	Occupant of motorcycle		30	Motorcycle ran into car.
343	5-20	Glenn	ML	S-g	X-5044-W	99	6	R.J. Mourning	Brakeman	4	Stepped on rock while getting off moving train.
344	6-10	Colton	ML	S-g	828	94	Standing	J.L. Todd	Brakeman	14	Foot slipped off stirrup while getting off standing car.
345	6-12	Hugo	ML	S-j	836	94	20	H.O. Davidson	Brakeman	21	Tripped on nail protruding from floor of flat car and fell forward on car.
346	6-17	El Cance	ML	S-i	832	56	12	E.A. Singleton	Signal Maintainer	5	Struck by caboose of train in back-up movement while removing motor car from track.
347	6-25	Pomona	ML	S-g	X-2746-W	33	10	P.O. Walton	Brakeman	6	Strained side while getting off moving car during switching.
348	6-25	Brawley	ML	S-h	X-1755-W	4	6	5 occupants of automobile		3 to 30	Automobile ran into side of train.
349	6-30	Brawley	ML	S-d	X-1809-W	1	3	J.E. Harmon	Brakeman	14	Strained back while setting hand brake on car.
350	6-30	Santa Barbara	ML	S-j	X-3657-W	67	5	W.W. Lockwood	Brakeman	14	Thrown off balance in caboose by slack action as train was stopping.
351	7-12	Seague	ML	S-e	815	70	Standing	R.T. Townsend	Fireman	12	Struck by water spout chain while raising spout after taking water.
352	8-4	Santa Ana	BR	S-h	X-1801-W	7	20	Occupant of automobile		Killed	Automobile struck by train.
353	8-4	Prink	ML	S-j	X-5025-W	121	40	H.V. Crank	Brakeman	Killed	Fell from moving train and run over.
354	8-9	Indio	ML	S-b	X-5024-W	63	Standing	C.M. Downey F.B. Kingston	Engine Foreman Yardman	14 21	Yard engine 2719 backing, shoving water car and caboose behind engine, collided with Extra 5024-West, which had just been stopped by emergency application of brakes, the extra west having been misrouted in-

130	2-7	North Alhambra	MR	S-h	X-2577-E	2	10	Occupant of automobile	7	Automobile ran into side of engine.	
131	2-10	Saugus	ML	S-e	815	69	Standing	W.S.Brown	Brakeman	4	Strain while operating switch lever.
132	2-16	Spadre	ML	S-J	X-5025-W	58	2	W.E.Dreibelbis B.B.Reeves	Conductor Brakeman	18 60	Thrown off balance in caboose when engineer made emergency stop to avoid running through switch.
133	2-18	Van Nuys	MR	S-h	X-2446-W	14	20	Occupant of automobile Occupant of automobile	Killed 7	Automobile ran into side of engine.	
134	2-23	Banning	ML	S-g	X-2642-E	20	3	J.E.Harris	Brakeman	45	Stepped on rock while getting off moving car.
135	2-24	Redlands, 2nd St.	MR	S-h	X-2559-E	9	10	Occupant of automobile	21	Automobile ran into side of engine.	
136	2-25	Monrovia	MR	S-h	X-2746-E	2	15	Occupant of automobile Occupant of automobile	Killed 30	Automobile ran into side of engine.	
137	3-20	Logan	ML	S-J	X-3723-W	74	35	D.M.Payne	Brakeman	14	Struck by water box falling from engine tender while standing in gangway.
138	3-24	Raymer	ML	S-h	X-2580-W	75	35	Occupant of auto-truck	6	Auto-truck ran into side of train.	
139	3-26	Harad	ML	S-g	X-4307-W	56	10	M.S.Jan Dell	Brakeman	21	Twisted foot while getting off moving train to close switch.
140	4-8	Indio	ML	S-d	X-5032-W	123	Standing	C.W.White	Brakeman	6	Strained back setting hand brake on car.
141	4-24	Supulveda	ML	S-h	X-4103-E	53	25	Occupant of automobile	Killed	Automobile struck by train.	
142	5-19	Pomona	ML	S-h	830	21	3	Occupant of motorcycle	30	Motorcycle ran into car.	
143	5-20	Glennia	ML	S-g	X-5044-W	99	6	R.J.Mourning	Brakeman	4	Stepped on rock while getting off moving train.
144	6-10	Calton	ML	S-g	828	94	Standing	J.L.Todd	Brakeman	14	Foot slipped off stirrup while getting off standing car.
145	6-12	Hugo	ML	S-J	836	94	20	H.O.Davidson	Brakeman	21	Tripped on nail protruding from floor of flat car and fell forward on car.
146	6-17	El Cerrito	ML	S-1	832	56	12	E.A.Singleton	Signal Maintainer	5	Struck by caboose of train in back-up movement while removing motor car from track.
147	6-25	Pomona	ML	S-g	X-2746-W	33	10	P.O.Walton	Brakeman	6	Strained side while getting off moving car during switching.
148	6-25	Brawley	ML	S-h	X-1755-W	4	6	5 occupants of automobile	3 to 30	Automobile ran into side of train.	
149	6-30	Brawley	ML	S-d	X-1809-W	1	3	J.E.Harmon	Brakeman	14	Strained back while setting hand brake on car.
150	6-30	Santa Barbara	ML	S-J	X-3657-W	67	5	W.W.Lockwood	Brakeman	14	Thrown off balance in caboose by slack action as train was stopping.
151	7-12	Saugus	ML	S-e	815	70	Standing	R.T.Townsend	Fireman	12	Struck by water spout chain while raising spout after taking water.
152	8-4	Santa Ana	MR	S-h	X-1801-W	7	20	Occupant of automobile	Killed	Automobile struck by train.	
153	8-6	Prink	ML	S-J	X-5025-W	121	40	H.V.Crank	Brakeman	Killed	Fell from moving train and run over.
154	8-9	Indio	ML	C-b	X-5024-W	63	Standing	C.M.Downey F.B.Kingston B.J.Hofferman	Engine Foreman Yardman Brakeman	14 21 14	Yard engine 2719 backing, shoving water car and caboose behind engine, collided with Extra 5024-West, which had just been stopped by emergency application of brakes, the extra west having been misrouted into track account switch improperly lined.
155	8-10	Hobbs	MR	S-d	X-2813-E	6	Standing	C.C.Stephens	Brakeman	30	Fell from standing car while releasing hand brake.
156	9-1	Saugus	ML	S-g	X-2642-E	4	Standing	P.B.Robinson	Brakeman	24	While getting off standing car stepped on sugar beet lying on ground.
157	9-15	North Los Angeles	ML	S-h	X-4417-W	61	35	2 occupants of automobile	7	Automobile ran into side of train.	
158	9-17	El Monte	ML	S-h	X-5018-W	44	25	2 occupants of automobile	14 and 21	Automobile ran into side of train.	
159	9-25	Burbank	ML	S-h	X-1768-W	13	12	Occupant of automobile	7	Automobile struck by train.	
160	9-29	Los Angeles	ML	S-J	X-2788-E	55	Standing	O.W.Ballinger	Brakeman	21	Right hand cut when contacted exposed screw head on caboose door.
161	10-3	Santa Paula	MR	S-d	X-2713-W	12	Standing	W.P.Church	Brakeman	13	Struck by spoke of brake wheel while releasing hand brake on car.
162	10-3	Berksh	MR	S-h	X-1809-E	24	25	Occupant of automobile Occupant of automobile	Killed 30	Automobile struck by train.	
163	10-6	Ventura	ML	S-J	X-3675-E	51	20	E.S.Northrup	Brakeman	5	Unbalanced by slack action on rear end and struck head against caboose ladder.

g - Caused by sudden stopping, starting, lurch or jerk of car or train.

(Sheet 14 of 16 Sheets)

	DATE (a)	LOCATION (b)	MAIN LINE (ML) OR BRANCH (BR) (c)	I.C.C. CLASS (d)	TRAIN NUMBER (e)	NO. CARS IN TRAIN (f)	SPEED (M.P.H.) (g)	PERSON INJURED		ESTIMATED DISABILITY (DAYS) (j)	DESCRIPTION OF ACCIDENT (k)
								NAME (h)	OCCUPATION (i)		
YEAR 1938 (Cont'd)											
364	10-7	Spadra	ML	S-h	828	97	20	Occupant of automobile		21	Automobile ran into side of train.
365	10-12	Colton	ML	S-d	X-3671-W	86	Standing	G.N.Lacey	Brakeman	30	Fell off car while releasing hand brake.
366	10-20	Firestone Park	BR	S-h	X-1801-W	58	20	2 occupants of automobile		7 and 30	Automobile struck by train.
367	10-21	Indio-Beaumont	ML	S-c	X-5025-W	64	Standing	A.L.Deutenberg	Fireman	28	Injured wrist operating injector water valve on engine.
368	10-29	Santa Ana	BR	S-h	X-1801-W	7	18	2 occupants of automobile occupant of automobile		Killed 60	Automobile struck by train.
369	11-6	Ontario	ML	S-h	820	8	35	Occupant of automobile		Killed	Automobile struck by train.
370	11-8	San Fernando	ML	S-h	2-815	65	25	Occupant of automobile		7	Automobile ran into side of engine.
371	11-10	Pomona	ML	S-h	810	7	12	Occupant of automobile		60	Automobile ran into side of train.
372	11-21	Kester	BR	S-h	X-2736-W	40	4	Occupant of automobile		14	Automobile ran into side of train.
373	11-28	El Centro	ML	S-g	X-1739-W	1	2	R.Fraun	Conductor	14	Fell to ground while stepping from ladder to brake platform of car.
374	12-14	Van Nuys	BR	S-h	X-2360-W	35	Standing	Occupant of motorcycle		14	Motorcycle ran into side of standing train.
375	12-18	Therard	BR	S-h	X-2580-W	3	Standing	2 occupants of automobile		7	Automobile ran into side of train.
376	12-20	Newhall	ML	S-g	815	59	Standing	E.F.Donahue	Brakeman	4	Foot slipped off rung of gangway ladder while boarding engine of standing train.
377	12-25	Indio	ML	S-j	X-5039-W	86	6	J.T.Curley	Brakeman	21	Sprained knee while running to board caboose of moving train after closing switch.
YEAR 1939											
378	1-5	Van Nuys	BR	S-h	X-2747-W	31	18	Occupant of automobile		14	Automobile ran into train.
379	1-16	Indio	ML	S-j	834	12	3	D.A.Randolph	Brakeman	120	Lost balance and fell from car while engine handling 11 cars and caboose.
380	1-19	Oxnard	ML	S-j	X-3689-W	85	8	N.J.Personne	Brakeman	8	While stepping from one car to another missed footing and fell to top of car.
381	2-8	Pomona	ML	S-d	X-2741-W	17	5	G.W.Rugg	Brakeman	60	Fell from car to ground while setting hand brake.
382	2-22	Tweedy	BR	S-d	X-1736-W	7	2	D.M.Payne	Brakeman	30	Fell from car to ground when brake wheel came off while setting hand brake.
383	3-3	Burbank	ML	S-h	X-2935-W	5	18	Occupant of automobile Occupant of automobile		Killed 30	Automobile ran into side of engine.
384	4-18	Cabazon	ML	S-d	836	96	Standing	A.C.Reeves	Brakeman	Killed	Fell to ground from 32nd car from engine while releasing hand brake.
385	4-23	Heber	ML	S-h	X-1755-W	2	30	Occupant of automobile Occupant of automobile		Killed Died	Automobile struck by train.
386	5-4	Monte Vista	ML	S-j	X-5024-W	64	20	K.F.Carrington	Brakeman	4	Struck by rock thrown at passing train.
387	5-26	Pomona	ML	S-h	X-2342-W	51	10	2 occupants of automobile		7	Automobile ran into side of moving train.
388	6-8	El Centro	ML	S-h	X-5046-W	99	15	Occupant of auto-truck		21	Auto-truck ran into train.
389	6-13	Estelle	ML	S-j	X-4302-W	6	1	M.S.JanDell	Conductor	60	Became unbalanced and fell against stove in caboose when engine and 2 cars coupled to train.
390	6-18	Colton	ML	S-j	2-828	60	3			30	

369	11-4	Ontario	ML	S-h	820	8	35	Occupant of automobile	Killed	Automobile struck by train.
370	11-8	San Fernando	ML	S-h	2-815	65	25	Occupant of automobile	7	Automobile ran into side of engine.
371	11-10	Pomona	ML	S-h	819	7	12	Occupant of automobile	60	Automobile ran into side of train.
372	11-21	Kester	BR	S-h	X-2736-W	40	4	Occupant of automobile	14	Automobile ran into side of train.
373	11-28	El Centro	ML	S-g	X-1739-E	1	2	R. Train Conductor	14	Fell to ground while stepping from ladder to brake platform of car.
374	12-14	Van Nuys	BR	S-h	X-2360-Z	35	Standing	Occupant of motorcycle	14	Motorcycle ran into side of standing train.
375	12-18	Therard	BR	S-h	X-2580-E	3	Standing	2 occupants of automobile	7	Automobile ran into side of train.
376	12-20	Newhall	ML	S-g	815	59	Standing	J.F. Donahue Brakeman	4	Foot slipped off rung of gangway ladder while boarding engine of standing train.
377	12-25	Indio	ML	S-J	X-5039-W	86	6	J.T. Corley Brakeman	21	Sprained knee while running to board caboose of moving train after closing switch.

1939

YEAR 1939

378	1-5	Van Nuys	BR	S-h	X-2747-Z	31	18	Occupant of automobile	14	Automobile ran into train.
379	1-16	Indio	ML	S-J	834	12	3	D.A. Randolph Brakeman	120	Lost balance and fell from car while engine handling 11 cars and caboose.
380	1-19	Oxnard	ML	S-J	X-2689-E	85	6	N.J. Personne Brakeman	8	While stepping from one car to another missed footing and fell to top of car.
381	2-8	Pomona	ML	S-d	X-2741-W	17	5	G.W. Rugg Brakeman	60	Fell from car to ground while setting hand brake.
382	2-22	Tweedy	BR	S-d	X-1736-W	7	2	D.M. Payne Brakeman	30	Fell from car to ground when brake wheel came off while setting hand brake.
383	3-3	Burbank	ML	S-h	X-2935-E	5	18	Occupant of automobile Occupant of automobile	Killed 30	Automobile ran into side of engine.
384	4-16	Cabazon	ML	S-d	836	96	Standing	A.C. Reeve Brakeman	Killed	Fell to ground from 32nd car from engine while releasing hand brake.
385	4-23	Heber	ML	S-h	X-1755-E	2	30	Occupant of automobile Occupant of automobile	Killed Died	Automobile struck by train.
386	5-4	El Monte	ML	S-J	X-5024-W	64	20	K.P. Carrington Brakeman	4	Struck by rock thrown by passing train.
387	5-20	Pomona	ML	S-h	X-2842-Z	51	10	2 occupants of automobile	7	Automobile ran into side of moving train.
388	6-8	El Centro	ML	S-h	X-5046-W	99	15	Occupant of auto-truck	21	Auto-truck ran into train.
389	6-13	Castelle	ML	S-J	X-4302-E	6	1	M.S. Janell Conductor	60	Became unbalanced and fell against stove in caboose when engine and 2 cars coupled to train.
390	6-18	Colton	ML	S-J	2-820	60	3	F.E. Gushing Brakeman	30	Thrown off balance in caboose by undesired emergency application of air brakes.
391	7-12	Alhambra	ML	S-h	X-2546-E	3	15	Occupant of automobile	21	Automobile struck by train.
392	8-3	Edom	ML	S-g	2-834	99	5	M.J. Russell Brakeman	45	Fell from side ladder 18th car from engine, claiming slack action caused him to lose hand hold.
393	8-10	San Fernando	ML	S-h	X-2747-E	20	Standing	E. Widy Fireman	10	Fell on engine tank while taking water.
394	8-19	Fillmore	BR	S-d	X-2577-W	32	Standing	D.W. Pillsbury Engineer	28	Strained side while operating reverse lever on engine.
395	8-22	Newhall	ML	S-J	816	55	20	E.B. Harris Brakeman	6	Piece of hot sand lodged in eye.
396	8-26	Ontario	ML	S-d	X-2711-E	16	Standing	L.R. Sickler Brakeman	7	Fell from car to ground while releasing hand brake.
397	9-11	Bassett	ML	S-g	2-824	31	5	R.E. Wing Brakeman	20	Struck knee on ladder rung while boarding car in moving train.
398	9-15	Hasson	ML	S-h	373 Passenger	33	15	J.M. Burns Fireman	9	No. 373 collided head-on with No. 72 account No. 373 overrunning switch at which it was to take siding.
399	9-23	Glendale	ML	S-h	374	25	43	Occupant of automobile	Killed	Automobile struck by train.

Caused by sudden stopping, starting, lurch or jerk of car or train.

	DATE (a)	LOCATION (b)	MAIN LINE (ML) OR BRANCH (BR) (c)	I.C.C. CLASS (d)	TRAIN NUMBER (e)	NO. CARS IN TRAIN (f)	SPEED (M.P.H.) (g)	PERSON INJURED		ESTIMATED DISABILITY (DAYS) (j)	DESCRIPTION OF ACCIDENT (k)
								NAME (h)	OCCUPATION (i)		
1939											
YEAR 1939 (Cont'd)											
400	10-17	Northeridge	ML	S-h	X-2820-W	34	35	3 occupants of automobile		7 to 30	Automobile ran into train.
401	11-4	Ontario	ML	S-g	X-2711-W	10	10	M Burt	Brakeman	15	Stepped on rock while getting off moving car.
402	11-4	Hugo	ML	S-j	X-4197-W	58	Standing	W.H. Rose	Brakeman	45	End door of car dropped on hand.
403	11-9	Twedy	BR	S-j	X-1760-W	42	Standing	S.A. Huff	Brakeman	9	Tripped over tie and fell against low switch stand.
404	11-9	Bassett	ML	S-j	X-4319-W	46	2	G.C. Sutton	Conductor	14	Unbalanced on rear platform of caboose by slack action as stop made.
405	11-13	Colton	ML	S-j	X-5048-W	63	20	H.R. Bowles	Brakeman	13	Foreign particle lodged in eye.
406	11-23	Kester	BR	S-h	X-1828-W	5	30	Occupant of automobile		2	Automobile ran into side of moving train.
1940											
YEAR 1940											
407	1-20	Twedy	BR	S-j	X-1760-E	22	Standing	B.G. Turner	Brakeman	60	Stepped on main track and was struck by gasoline track motor car.
408	1-26	Los Angeles	ML	S-i	830	34	8	C.G. Burwell	Conductor	14	While checking his train as it pulled by him, was struck by cut of 5 cars handled by yard engine 2704 on adjacent track.
409	1-28	Hiland	ML	S-j	822	97	Standing	A.B. Gibson	Brakeman	21	Caught finger while lifting broken drawbar onto end sill of car.
410	1-29	West Anaheim	BR	S-e	X-1813-E	17	Standing	G.O. Hiltz	Fireman	28	Lost balance while moving water spout back in place and fell from engine tender to ground.
411	2-1	Vinvale	BR	S-d	X-1760-E	2	Standing	R.E. Hall	Brakeman	28	Struck by brake club while releasing hand brake on standing car.
412	2-3	Villa Park	BR	S-h	X-3334-E	1	12	Occupant of automobile 3 occupants of automobile		Killed 7	Automobile struck by train.
413	3-8	Pomona	ML	S-d	X-2842-E	2	Standing	M.S. JanDall	Brakeman	19	Struck by brake wheel while releasing hand brake on car.
414	3-24	North Hollywood	BR	S-h	X-2842-E	16	15	Occupant of automobile		7	Automobile ran into side of train.
415	3-26	Ontario	ML	S-h	X-2727-W	52	Standing	Occupant of automobile		7	Automobile ran into side of standing train.
416	4-17	Riverside	BR	S-d	X-1736-E	1	Standing	L. Creller	Brakeman	5	Thumb struck by brake wheel spoke while releasing hand brake on car.
417	4-24	Heena	ML	S-e	X-4192-W	98	40	L.T. Jones	Brakeman	12	Derailed 13th car from engine account burnt off journal, sudden stop injured employe in caboose.
418	4-24	West Anaheim	BR	S-h	X-1813-W	15	5	Occupant of automobile		7	Auto ran into side of train.
419	5-2	Fulton Wells	BR	S-h	X-1813-E	3	6	Occupant of auto-truck		7	Auto-truck ran into train.
420	5-3	Burbank	ML	S-h	X-2559-W	7	25	Occupant of auto-truck		30	Auto-truck struck by train.
421	5-13	Firestone Park	BR	S-h	X-1739-E	17	15	Pedestrian		30	Struck by train.
422	5-15	Coechalla	ML	S-j	X-4187-W	87	8	W.C. DuPre	Brakeman	19	Fell to top of car when unbalanced by engine recoupling to a cut of 4 cars which employe was riding.
423	5-16	Pomona	ML	S-h	X-5021-W	84	30	Operator of scooter		60	Motor scooter ran into side of engine.
424	5-21	Edam	ML	S-j	X-4200-W	99	8	C.G. Burwell	Conductor	5	Unbalanced in caboose by undesired emergency application of air brakes.
425	5-25	West Glendale	ML	S-h	812	69	34	Occupant of auto truck		30	Auto-truck struck by train.
426	5-28	Banning	ML	S-d	X-5008-W	40	Standing	J.E. Harris	Brakeman	14	Struck by brake club while releasing hand brake on standing car.
427	6-3	Twedy	BR	S-d	X-1736-E	5	Standing	B. Matiser	Brakeman	2	Fell against end of car when brake suddenly released while setting the brake.
428	6-13	San Gabriel	ML	S-j	X-2851-E	10	Standing	L.R. Siekler	Brakeman	6	Stepped on piece of ballast while running to board moving cars.
429	7-3	Marlboro	BR	S-h	X-2749-E	1	15	2 occupants of automobile		7 and 21	Automobile ran into side of train.
430	7-12	Los Angeles	ML	S-j	2-824	86	15	R.B. Cooper	Conductor	12	Unbalanced in caboose by slack action of train.

405	11-13	Union	ML	S-1	X-1828-W	5	30	Occupant of automobile	2	Automobile ran into side of moving train.	
1940											
YEAR 1940											
407	1-20	Twedy	ML	S-1	X-1760-E	22	Standing	B.G. Turner	Brakeman	60	Stepped on main track and was struck by gasoline track motor car.
408	1-26	Los Angeles	ML	S-1	830	34	8	C.G. Burwell	Conductor	14	While checking his train as it pulled by him, was struck by cut of 5 cars handled by yard engine 2704 on adjacent track.
409	1-28	Millam	ML	S-1	822	97	Standing	A.B. Gibson	Brakeman	21	Caught finger while lifting broken drawbar onto end sill of car.
410	1-29	West Anaheim	ML	S-2	X-1813-E	17	Standing	G.O. Hiltz	Fireman	28	Lost balance while moving water spout back in place and fell from engine tender to ground.
411	2-1	Vinvale	ML	S-2	X-1760-E	2	Standing	R.E. Hall	Brakeman	28	Struck by brake club while releasing hand brake on standing car.
412	2-3	Villa Park	ML	S-2	X-2334-E	1	12	Occupant of automobile 3 occupants of automobile	Killed	7	Automobile struck by train.
413	3-8	Pomona	ML	S-2	X-2842-E	2	Standing	M.S. Jambell	Brakeman	19	Struck by brake wheel while releasing hand brake on car.
414	3-24	North Hollywood	ML	S-2	X-2842-E	16	15	Occupant of automobile	7	Automobile ran into side of train.	
415	3-26	Ogario	ML	S-2	X-2727-W	52	Standing	Occupant of automobile	7	Automobile ran into side of standing train.	
416	4-17	Riverdale	ML	S-2	X-1736-E	1	Standing	L. Celler	Brakeman	5	Thumb struck by brake wheel spoke while releasing hand brake on car.
417	4-24	Bacon	ML	S-2	X-4192-W	98	40	L.T. Jones	Brakeman	12	Derailed 13th car from engine account burnt off journal, sudden stop injured employe in caboose.
418	4-24	West Anaheim	ML	S-2	X-1813-W	15	5	Occupant of automobile	7	Auto ran into side of train.	
419	5-2	Pulmon Wells	ML	S-2	X-1813-E	3	6	Occupant of auto-truck	7	Auto-truck ran into train.	
420	5-3	Burbank	ML	S-2	X-2559-W	7	25	Occupant of auto-truck	30	Auto-truck struck by train.	
421	5-13	Pico Point Park	ML	S-2	X-1739-E	17	15	Pedestrian	30	Struck by train.	
422	5-15	Coachella	ML	S-1	X-4187-W	87	8	W.C. DeFree	Brakeman	19	Fell to top of car when unbalanced by engine recoupling to a cut of 4 cars which employe was riding.
423	5-16	Pomona	ML	S-2	X-5021-W	84	30	Operator of scooter	60	Motor scooter ran into side of engine.	
424	5-21	Eden	ML	S-1	X-4200-W	99	8	C.G. Burwell	Conductor	5	Unbalanced in caboose by undesired emergency application of air brakes.
425	5-25	West Glendale	ML	S-2	812	69	34	Occupant of auto truck	30	Auto-truck struck by train.	
426	5-28	Banning	ML	S-2	X-5008-W	40	Standing	J.E. Harris	Brakeman	14	Struck by brake club while releasing hand brake on standing car.
427	6-3	Twedy	ML	S-2	X-1736-E	5	Standing	B. Altiser	Brakeman	21	Fell against end of car when brake suddenly released while setting the brake.
428	6-13	San Gabriel	ML	S-1	X-2851-E	10	Standing	L.R. Siekler	Brakeman	6	Stepped on piece of ballast while running to board moving cars.
429	7-3	Maribon	ML	S-2	X-2749-E	1	15	2 occupants of automobile	7 and 21	Automobile ran into side of train.	
430	7-12	Los Angeles	ML	S-1	2-824	86	15	R.B. Cooper	Conductor	12	Unbalanced in caboose by slack on of train.
431	7-23	Salton	ML	S-1	X-4200-W	85	35	F.E. Fry	Brakeman	28	Strained shoulder and back when d hold gave way while hanging on side of car.
432	7-25	South Fontana	ML	S-2	2-824	94	Standing	P.S. Thomas	Conductor	4	Strained ligament of arm while a ing hand brake on car in standing train.
433	7-26	Calveria	ML	S-2	358	9	5	R.H. Ray	Conductor	90	Severed left leg when fell from run over by car while switching
434	7-31	Chino	ML	S-1	X-2820-W	5	3	J.A. Galloway	Conductor	4	Best rack shifted and caught f car as coupling made.
435	8-4	Allen	ML	S-1	X-2820-W	57	30	K.M. Beal	Brakeman	28	Foreign particle in eye.
436	8-17	Omaret	ML	S-1	X-1742-E	4	4	W.W. Wirt	Conductor	21	Car door closed on hand.
437	9-2	Indio	ML	S-1	X-5024-E	78	25	L.O. Hart	Brakeman	Killed	Walked into side of engine of moving train.

- Caused by sudden stopping, starting, lurch or jerk of car or train.

(Sheet 16 of 16 Sheets)

DATE (a)	LOCATION (b)	MAIN LINE (ML) OR BRANCH (BR) (c)	I.C.C. CLASS (d)	TRAIN NUMBER (e)	NO. CARS IN TRAIN (f)	SPEED (M.P.H.) (g)	PERSON INJURED		ESTIMATED DISABILITY (DAYS) (j)	DESCRIPTION OF ACCIDENT (k)	
							NAME (h)	OCCUPATION (i)			
1940 YEAR 1940 (Cont'd)											
438	9-5	El Centro	ML	S-1	X-1721-W	16	3	G.Smith	Conductor	Killed	Run over by train
439	9-6	Indio	ML	S-d	X-5001-E	94	Standing	F.J.Costello	Brakeman	60	Fell from car to ground while setting hand brake.
440	9-10	Hewitt	ML	S-h	X-4188-E	95	2	Occupant of automobile		7	Automobile ran into side of moving train.
441	9-15	Oxnard	ML	S-g	X-1793-E	6	5	R.E.Hall	Brakeman	60	Fell from car to ground as coupling made while climbing down ladder.
442	9-17	Los Angeles	ML	S-h	X-1794-E	31	10	Occupant of automobile		7	Automobile struck by train.
443	9-24	Colton	ML	S-g	X-4201-W	65	6	W.E.Albright	Brakeman	21	Fell while attempting to board caboose of moving train.
444	9-28	Mecoa	ML	S-j	X-1809-E	23	Standing	H.L.Salsan	Brakeman	9	Foreign particle in eye.
445	10-7	Ventura	ML	S-d	X-4200-E	91	Standing	H.F.Faust	Brakeman	28	Brake club slipped while releasing hand brake on standing car.
446	10-11	Imperial	ML	S-h	X-1734-E	15	35	2 occupants of automobile		30 and 60	Automobile struck by train.
447	10-18	Airbank	ML	S-h	X-2820-E	8	5	Occupant of auto-truck		14	Auto-truck struck by train.
448	10-22	Amos	ML	S-1	X-4195-W	66	40	V.D.Richards	Brakeman	Killed	Train parted account knuckle breaking 4th car from engine due to undesired emergency action of air brakes; head brakeman fell from train and run over.
449	11-1	Vernon	BR	S-a	X-2749-W	40	12	Street car passenger		90	Street car struck by train.
450	11-17	Beaumont	ML	S-g	X-5044-W	101	8	B.W.Biederman	Brakeman	21	Slipped or missed footing and fell while boarding moving train.
451	11-20	Stoneman	ML	S-h	X-1678-W	23	30	Occupant of automobile		30	Automobile struck by train.
452	11-22	Wahoe	ML	S-h	3-813	70	35	Occupant of automobile		Killed	Automobile struck by train.
453	11-22	South Fontana	ML	S-h	X-5024-E	86	Standing	Occupant of automobile		7	Automobile ran into side of standing train.
454	12-4	Indio	ML	S-1	X-5043-W	100	12	L.R.Sickler	Brakeman	60	Right foot severed when 6th brakeman fell from 37th car from caboose and run over.
455	12-9	Compton	BR	S-h	X-1742-E	3	15	Occupant of automobile		7	Automobile struck by train.
456	12-10	Twedy	BR	S-j	X-1809-E	1	4	W.O.Williams	Brakeman	21	Fell from car as coupling made.
457	12-17	Los Angeles	ML	S-d	822	84	Standing	H.H.Cheminitzer	Brakeman	21	Struck by brake club while releasing hand brake on car in standing train.
458	12-21	Twedy	BR	S-j	X-1729-E	11	5	L.T.A.Cockrell	Car Inspr.	28	Fell from ladder inside of car on which he was standing when coupling made.
459	12-26	Ventura	ML	S-g	X-4187-W	58	15	C.E.Murphy	Brakeman	10	Fell while attempting to board caboose of moving train.
460	12-28	Mecoa	ML	S-j	X-5005-W	123	35	J.A.Sutton	Conductor	14	Unbalanced in caboose by sudden stop due to undesired emergency application of air brakes.

Defendant's Exhibit No. 387 (Witness J.J. Sullivan)
Apr. 29, 1941

COMPARISONS OF CASUALTIES
TO

EMPLOYES AND NON-TRESPASSERS
ROAD FREIGHT TRAIN OPERATION

SUSTAINED IN TRAIN AND TRAIN-SERVICE ACCIDENTS
REPORTED TO THE INTERSTATE COMMERCE COMMISSION
YEARS 1930 TO 1940, INCLUSIVE

SOUTHERN PACIFIC COMPANY PACIFIC LINES
STATE OF NEW MEXICO

YEAR	FREIGHT TRAIN		AVERAGE CARS PER TRAIN	CASUALTY RATE PER MILLION FREIGHT TRAIN MILES								CASUALTY RATE PER 100 MIL EMPLOYEES			
				EMPLOYEES				NON-EMPLOYEES				TOTAL ALL PERSONS	CONDUCTORS AND BRAKEMEN	ENGINEERS AND FIREMEN	OTHER EMPLOYEES
	TRAIN MILES (THOUSANDS)	CAR MILES (THOUSANDS)		CONDUCTORS AND BRAKEMEN	ENGINEERS AND FIREMEN	OTHER EMPLOYEES	TOTAL ALL EMPLOYEES	OCCUPANTS OF MOTOR VEHICLES	OTHER NON- TRESPASSERS	TOTAL NON- TRESPASSERS					
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
1930	2,026	106,579	52.11	3.95	.99	.49	5.43	-	.99	.99	6.42	7.58	1.89	.95	10.42
1931	1,693	90,092	53.21	4.13	2.36	-	6.50	-	-	-	6.50	7.77	4.44	-	12.21
1932	1,425	74,887	52.55	4.21	2.11	.70	7.02	1.40	-	1.40	8.42	8.01	4.01	1.34	13.35
1933	1,234	68,157	55.23	3.24	.81	2.43	6.48	1.62	-	1.62	8.10	5.87	1.47	4.40	11.74
1934	1,375	76,168	55.39	8.73	2.18	.73	11.64	-	.73	.73	12.36	15.75	3.94	1.31	21.01
1935	1,569	86,706	55.26	3.82	2.55	1.27	7.65	-	-	-	7.65	6.92	4.61	2.31	13.84
6 YEARS 1930-1935	9,322	501,589	53.81	4.61	1.82	.86	7.29	.43	.32	.75	8.05	8.57	3.39	1.59	13.56
1936	1,757	91,820	52.26	6.26	1.71	.57	8.54	2.85	-	2.85	11.38	11.98	3.27	1.09	16.34
1937	1,916	99,557	51.96	4.70	.52	-	5.22	-	1.04	1.04	6.26	9.04	1.00	-	10.04
1938	1,747	97,543	55.83	4.01	.57	.57	5.15	.57	-	.57	5.72	7.18	1.03	1.03	9.23
1939	1,784	104,419	58.53	2.24	1.68	-	3.92	-	-	-	3.92	3.83	2.87	-	6.70
1940	1,676	109,583	65.38	10.74	-	1.19	11.93	.60	-	.60	12.53	16.43	-	1.83	18.25

Sullivan)

PASSERS RATION

MENTS
SION

C LINES

O

TOTAL ALL PERSONS	CASUALTY RATE PER 100 MILLION FREIGHT TRAIN CAR MILES							
	EMPLOYEES				NON-EMPLOYEES			TOTAL ALL PERSONS
	CONDUCTORS AND BRAKEMEN	ENGINEERS AND FIREMEN	OTHER EMPLOYEES	TOTAL ALL EMPLOYEES	OCCUPANTS OF MOTOR VEHICLES	OTHER NON- TRESPASSERS	TOTAL NON- TRESPASSERS	
(1)	(m)	(n)	(o)	(p)	(q)	(r)	(s)	(t)
6.42	7.58	1.89	.95	10.42	-	1.89	1.89	12.31
6.50	7.77	4.44	-	12.21	-	-	-	12.21
8.42	8.01	4.01	1.34	13.35	2.67	-	2.67	16.02
8.10	5.87	1.47	4.40	11.74	2.93	-	2.93	14.67
12.36	15.75	3.94	1.31	21.01	-	1.31	1.31	22.32
7.65	6.92	4.61	2.31	13.84	-	-	-	13.84
8.05	8.57	3.39	1.59	13.55	.80	.60	1.40	14.95
11.38	11.98	3.27	1.09	16.34	5.45	-	5.45	21.78
6.26	9.04	1.00	-	10.04	-	2.01	2.01	12.05
5.72	7.18	1.03	1.03	9.22	1.03	-	1.03	10.25
3.92	3.83	2.87	-	6.70	-	-	-	6.70
12.53	16.43	-	1.63	18.25	.91	-	.91	19.16

SUSTAINED IN TRAIN AND TRAIN-SERVICE ACCIDENTS
REPORTED TO THE INTERSTATE COMMERCE COMMISSION
YEARS 1930 TO 1940, INCLUSIVE

SOUTHERN PACIFIC COMPANY PACIFIC LINES
STATE OF NEW MEXICO

YEAR	FREIGHT TRAIN		AVERAGE CARS PER TRAIN	CASUALTY RATE PER MILLION FREIGHT TRAIN MILES								CASUALTY RATE PER EMPLOYEE		
	TRAIN MILES (THOUSANDS)	CAR MILES (THOUSANDS)		EMPLOYEES				NON-EMPLOYEES			TOTAL ALL PERSONS	EMPLOYEES		
				CONDUCTORS AND BRAKEMEN	ENGINEERS AND FIREMEN	OTHER EMPLOYEES	TOTAL ALL EMPLOYEES	OCCUPANTS OF MOTOR VEHICLES	OTHER NON- TRESPASSERS	TOTAL NON- TRESPASSERS		CONDUCTORS AND BRAKEMEN	ENGINEERS AND FIREMEN	OTHER EMPLOYEES
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)
1930	2,026	105,579	52.11	3.95	.99	.49	5.43	-	.99	.99	6.42	7.56	1.89	.95
1931	1,693	90,092	53.21	4.13	2.36	-	6.50	-	-	-	6.50	7.77	4.44	-
1932	1,425	74,887	52.55	4.21	2.11	.70	7.02	1.40	-	1.40	8.42	8.01	4.01	1.34
1933	1,234	68,157	55.23	3.24	.81	2.43	6.48	1.62	-	1.62	8.10	5.87	1.47	4.40
1934	1,375	76,168	55.39	6.73	2.18	.73	11.64	-	.73	.73	12.36	15.75	4.94	1.31
1935	1,569	86,706	55.26	3.82	2.55	1.27	7.65	-	-	-	7.65	6.92	4.61	2.31
6 YEARS 1930-1935	9,322	501,599	53.61	4.61	1.82	.86	7.29	.43	.38	.75	8.05	8.57	3.39	1.59
1936	1,757	91,820	52.26	6.26	1.71	.57	8.54	2.85	-	2.85	11.38	11.98	3.27	1.09
1937	1,916	99,557	51.96	4.70	.52	-	5.22	-	1.04	1.04	6.26	9.04	1.00	-
1938	1,747	97,543	55.83	4.01	.57	.57	3.15	.57	-	.57	5.72	7.18	1.05	1.03
1939	1,784	104,419	58.53	2.24	1.68	-	3.92	-	-	-	3.92	3.83	2.87	-
1940	1,676	109,583	65.38	10.74	-	1.19	11.93	.60	-	.60	12.53	16.43	-	1.63
5 YEARS 1936-1940	8,880	502,922	56.64	5.52	.90	.45	6.87	.79	.23	1.01	7.88	9.74	1.59	.80
11 YEARS 1930-1940	18,202	1,004,511	55.19	5.05	1.37	.66	7.06	.60	.27	.88	7.97	9.16	2.49	1.19

MENTS
SION

C LINES
O

CASUALTY RATE PER 100 MILLION FREIGHT TRAIN CAR MILES								
TOTAL ALL PERSONS	EMPLOYEES				NON-EMPLOYEES			TOTAL ALL PERSONS
	CONDUCTORS AND BRAKEMEN	ENGINEERS AND FIREMEN	OTHER EMPLOYEES	TOTAL ALL EMPLOYEES	OCCUPANTS OF MOTOR VEHICLES	OTHER NON- TRESPASSERS	TOTAL NON- TRESPASSERS	
(1)	(m)	(n)	(o)	(p)	(q)	(r)	(s)	(t)
6.42	7.58	1.89	.95	10.42	-	1.89	1.89	12.31
6.50	7.77	4.44	-	12.21	-	-	-	12.21
8.42	8.01	4.01	1.34	13.35	2.67	-	2.67	16.02
8.10	5.87	1.47	4.40	11.74	2.93	-	2.93	14.67
12.36	15.75	3.94	1.31	21.01	-	1.31	1.31	22.32
7.65	6.92	4.61	2.31	13.84	-	-	-	13.84
8.05	8.57	3.39	1.59	13.55	.80	.60	1.40	14.95
11.38	11.98	3.27	1.09	16.34	5.45	-	5.45	21.78
6.26	9.04	1.00	-	10.04	-	2.01	2.01	12.05
5.72	7.18	1.03	1.03	9.23	1.03	-	1.03	10.25
3.92	3.83	2.87	-	6.70	-	-	-	6.70
12.53	16.43	-	1.83	18.25	.91	-	.91	19.16
7.88	9.74	1.59	.80	12.13	1.39	.40	1.79	13.92
7.97	9.16	2.49	1.19	12.84	1.10	.50	1.59	14.43

CASUALTIES TO ALL PERSONS EXCEPT TRESPASSERS

YEAR	EMPLOYEES												NON-EMPLOYEES					
	CONDUCTORS AND BRAKEMAN			ENGINEERS AND FIREMEN			OTHER EMPLOYEES			TOTAL ALL EMPLOYEES			OCCUPANTS OF MOTOR VEHICLES			OTHER NON-TRESPASSERS		
	KILLED (b)	INJURED (c)	TOTAL (d)	KILLED (e)	INJURED (f)	TOTAL (g)	KILLED (h)	INJURED (i)	TOTAL (j)	KILLED (k)	INJURED (l)	TOTAL (m)	KILLED (n)	INJURED (o)	TOTAL (p)	KILLED (q)	INJURED (r)	TOTAL (s)
1930	-	8	8	-	2	2	-	1	1	-	11	11	-	-	-	-	2	2
1931	-	7	7	-	4	4	-	-	-	-	11	11	-	-	-	-	-	-
1932	-	6	6	-	3	3	-	1	1	-	10	10	-	2	2	-	-	-
1933	-	4	4	-	1	1	-	3	3	-	8	8	-	2	2	-	-	-
1934	-	12	12	-	3	3	-	1	1	-	16	16	-	-	-	-	1	1
1935	-	6	6	-	4	4	-	2	2	-	12	12	-	-	-	-	-	-
6 YEARS 1930-1935	-	45	45	-	17	17	-	8	8	-	68	68	-	4	4	-	3	3
1936	-	11	11	-	3	3	-	1	1	-	15	15	1	4	5	-	-	-
1937	-	9	9	-	1	1	-	-	-	-	10	10	-	-	-	-	2	2
1938	-	7	7	-	1	1	-	1	1	-	9	9	-	1	1	-	-	-
1939	-	4	4	-	3	3	-	-	-	-	7	7	-	-	-	-	-	-
1940	-	18	18	-	-	-	-	2	2	-	20	20	-	1	1	-	-	-
5 YEARS 1936-1940	-	49	49	-	8	8	-	4	4	-	61	61	1	6	7	-	2	2
11 YEARS 1930-1940	-	92	92	-	25	25	-	12	12	-	129	129	1	10	11	-	5	5

SSERS

NON-EMPLOYEES								TOTAL ALL PERSONS EXCEPT TRESPASSERS		
PARTS OF VEHICLES		OTHER NON-TRESPASSERS			TOTAL NON-TRESPASSERS					
INJURED	TOTAL	KILLED	INJURED	TOTAL	KILLED	INJURED	TOTAL	KILLED	INJURED	TOTAL
(o)	(p)	(q)	(r)	(s)	(t)	(u)	(v)	(w)	(x)	(y)
-	-	-	2	2	-	2	2	-	13	13
-	-	-	-	-	-	-	-	-	11	11
2	2	-	-	-	-	2	2	-	12	12
2	2	-	-	-	-	2	2	-	10	10
-	-	-	1	1	-	1	1	-	17	17
-	-	-	-	-	-	-	-	-	12	12
4	4	-	3	3	-	7	7	-	75	75
4	5	-	-	-	1	4	5	1	19	20
-	-	-	2	2	-	2	2	-	12	12
1	1	-	-	-	-	1	1	-	10	10
-	-	-	-	-	-	-	-	-	7	7
1	1	-	-	-	-	1	1	-	21	21
6	7	-	2	2	1	8	9	1	69	70
10	11	-	5	5	1	15	16	1	144	145

NUMBER OF CASUALTIES SEGREGATED AS TO FREIGHT TRAINS OF 70 CARS OR LESS, AND THOSE OVER 70 CARS

YEAR	CONDUCTORS AND BRAKEMEN		ENGINEERS AND FIREMEN		OTHER EMPLOYEES		ALL EMPLOYEES		OCCUPANTS OF MOTOR VEHICLES		OTHER NON-TRESPASSERS		TOTAL NON-TRESPASSERS	
	70 CARS OR LESS	OVER 70 CARS	70 CARS OR LESS	OVER 70 CARS	70 CARS OR LESS	OVER 70 CARS	70 CARS OR LESS	OVER 70 CARS	70 CARS OR LESS	OVER 70 CARS	70 CARS OR LESS	OVER 70 CARS	70 CARS OR LESS	OVER 70 CARS
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)
1930	7	1	1	1	1	-	9	2	-	-	2	-	2	-
1931	5	2	2	2	-	-	7	4	-	-	-	-	-	-
1932	3	3	3	-	1	-	7	3	2	-	-	-	2	-
1933	2	2	1	-	3	-	6	2	2	-	-	-	2	-
1934	9	3	2	1	1	-	12	4	-	-	1	-	1	-
1935	3	3	3	1	2	-	8	4	-	-	-	-	-	-
6 YEARS 1930-1935	29	14	12	5	8	-	49	19	4	-	3	-	7	-
1936	9	2	3	-	1	-	13	2	2	3	-	-	2	3
1937	8	1	1	-	-	-	9	1	-	-	2	-	2	-
1938	7	-	1	-	1	-	9	-	1	-	-	-	1	-
1939	4	-	3	-	-	-	7	-	-	-	-	-	-	-
1940	10	8	-	-	1	1	11	9	1	-	-	-	1	-
5 YEARS 1936-1940	38	11	8	-	3	1	49	12	4	3	2	-	6	3
11 YEARS 1930-1940	67	25	20	5	11	1	98	31	8	3	5	-	13	3

SE OVER 70 CARS

OTHER -TRESPASSERS		TOTAL NON-TRESPASSERS		GRAND TOTAL ALL PERSONS	
ARS ESS	OVER 70 CARS	70 CARS OR LESS	OVER 70 CARS	70 CARS OR LESS	OVER 70 CARS
	(m)	(n)	(o)	(p)	(q)
2	-	2	-	11	2
-	-	-	-	7	4
-	-	2	-	9	3
-	-	2	-	8	2
-	-	1	-	13	4
-	-	-	-	8	4
-	-	7	-	56	19
-	-	2	3	15	5
-	-	2	-	11	1
-	-	1	-	10	-
-	-	-	-	7	-
-	-	1	-	12	9
-	-	6	3	55	15
-	-	13	3	111	34

CASUALTIES TO
ROAD FREIGHT CONDUCTORS, BRAKEMEN AND FLAGMEN
CAUSED FROM SUDDEN STOPPING, STARTING, LURCH AND JERK OF TRAIN
OCCURRING ON TRAINS OF 70 CARS AND LESS, AND ON TRAINS OF OVER 70 CARS

YEAR (a)	70 CARS AND LESS (b)	OVER 70 CARS (c)	TOTAL (d)	NUMBER OF SUCH CASUALTIES PER:	
				MILLION TRAIN MILES (e)	100 MILLION CAR MILES (f)
1930	3	1	4	1.37	3.79
1931	2	2	4	2.36	4.44
1932	-	1	1	.70	1.34
1933	-	2	2	1.63	2.93
1934	-	2	2	1.45	2.63
1935	1	3	4	2.55	4.61
TOTAL 1930 - 1935	6	11	17	1.82	3.39
1936	-	1	1	.57	1.09
1937	2	1	3	1.57	3.01
1938	-	-	-	-	-
1939	1	-	1	.56	.96
1940	2	5	7	4.18	6.39
TOTAL 1936 - 1940	5	7	12	1.35	2.39
GRAND TOTAL 1930 - 1940	11	18	29	1.59	2.89
DECREASE PERIOD 1936 - 1940 COMPARED WITH 1930 - 1935				25.82%	29.50%
DECREASE PERIOD 1936 - 1940 COMPARED WITH 1930 - 1940				15.09%	17.30%

(Sheet 5 of 9 sheets)

DETAIL OF CASUALTIES
ALL CLASSES OF PERSONS, EXCEPT TRESPASSERS
TRAIN AND TRAIN SERVICE ACCIDENTS
ROAD FREIGHT TRAIN OPERATION
REPORTED TO THE INTERSTATE COMMERCE COMMISSION
YEARS 1930 TO 1940, INCLUSIVE

SOUTHERN PACIFIC COMPANY
LINES IN
STATE OF NEW MEXICO

DATE (a)	LOCATION (b)	I.C.C. CLASS (c)	TRAIN NUMBER (d)	NO. CARS IN TRAIN (e)	SPEED (M.P.H.) (f)	PERSON INJURED		ESTIMATED DISABILITY (DAYS) (i)	DESCRIPTION OF ACCIDENT (j)
						NAME (g)	OCCUPATION (h)		
YEAR 1930									
1 1-7	Corona	#S-J	3-227	59	4	R.E. Russell	Conductor	11	Abrupt stop and slack action of train
2 2-1	Escondido	S-J	232	47	Standing	C.E. Roe	Brakeman	40	Fell to ground while setting hand brake account ratchet wheel key missing on hand brake.
3 2-19	Mongola	#S-J	X-3310-E	70	30	R.C. East	Brakeman	7	Sudden stop due to emergency application of brakes caused by nipple in train line branch pipe on engine rusting out of entrance to distributing valve resulting in nipple breaking off.
4 3-27	Palomas	S-J	2-226	18	20	H.W. Beasley	Fireman	7	Jumped from engine and fell after superheater flue had broken.
5 3-27	Desert	S-J	1-229	70	Standing	S.W. VanStone	Brakeman	5	Stepped on piece of slag while walking alongside train.
6 3-29	Luna	S-J	203	51	Standing	T. Sedillo	Sec. Laborer	45	Fractured leg when thrown from car with tie while unloading ties.
7 4-28	Vera	#S-J	X-3334-W	99	25	H.F. Provence	Brakeman	7	Air hose burst, 29th car from engine, causing emergency stop.
8 5-4	Corona	S-J	203	57	Standing	W.E. Grumbles	Brakeman	8	Foot fell on foot while handling L.C.L. freight.
9 5-16	Alamogordo	S-J	218	9	2	Non-trespasser		45	Employee of lumber company caught hand between steel running board and end of building when car was moved.
10 6-13	Alamogordo	S-J	201	89	Standing	W.G. Boswell	Fireman	5	Hand scalded when poppet valve on stoker opened.
11 8-9	High Rolls	S-J	213	18	8	S. Gates	Brakeman	30	Fell to ground when slipped getting off engine.
12 11-24	Vaughn	S-J	205	3	5	Non-trespasser		18	Occupant of outfit car injured when car was struck by car being handled by engine due to switches being improperly lined.
13 12-24	Luna	#S-J	X-3657-E	70	7	R.R. Erie	Conductor	20	Engine derailed by hatch cover of car on track caused rough stop and injured employee in caboose.
YEAR 1931									
14 1-14	Deming	S-J	X-3666-W	100	10	W.E. Schmeley	Engineer	14	Struck back of finger against some object opening blow-off cock.
15 2-21	Hargis	S-J	2-226	60	12	W. Gebo	Brakeman	20	Claims stepped in hole getting off train.
16 4-5	Vaughn	#S-J	X-3655-W	70	6	S.W. VanStone	Brakeman	45	Sudden stop injured employee in caboose when engineer made emergency application of train brakes.
17 5-23	Icehouse Grove	#S-J	2-410	100	15	H.F. Provence	Brakeman	18	Slack ran in when engineer made service application of brakes injuring employee in caboose.
18 6-7	Alamogordo	S-J	X-3653-W	91	Standing	W.G. Boswell	Fireman	15	Particles of cinders and foreign matter penetrated eye.
19 6-16	Gardn	S-J	2-426	68	40	A.F. Infante	Engineer	9	Hot cinder in left eye.
20 6-25	Notee	#S-J	X-5003-W	70	15	H.E. Gilvin	Conductor	30	Service application train brakes caused run-in on rear of train-injured employee in caboose.
21 7-5	Elwood	S-J	X-3655-W	70	6	C.E. Roe	Brakeman	4	Slipped on piece of slag while running for caboose after closing switch.

DATE (a)	STATION (b)	CLASS (c)	NUMBER (d)	AGE (e)	SEX (f)	NAME (g)	OCCUPATION (h)	(i)	DESCRIPTION OF ACCIDENT (j)	
1930										
1	1-7	Corona	#S-J	3-227	59	4	R.E. Russell	Conductor	11	Abrupt stop and slack action of train
2	2-1	Recondida	S-d	232	47	Standing	C.E. Roe	Brakeman	40	Fell to ground while setting hand brake account ratchet wheel key missing on hand brake.
3	2-19	Wengola	#S-J	X-3318-E	70	30	R.C. East	Brakeman	7	Sudden stop due to emergency application of brakes caused by nipple in train line branch pipe on engine rusting out of entrance to distributing valve resulting in nipple breaking off.
4	3-27	Palomas	S-g	2-226	18	20	H.W. Beasley	Fireman	7	Jumped from engine and fell after superheater flue had broken.
5	3-27	Desert	S-J	1-229	70	Standing	S.W. VanStone	Brakeman	5	Stepped on piece of slag while walking alongside train.
6	3-29	Luna	S-J	203	51	Standing	T. Sedille	Sec. Laborer	45	Fractured leg when thrown from car with tie while unloading ties.
7	4-28	Vevay	#S-J	X-3324-W	99	25	H.F. Provenoe	Brakeman	7	Airhose burst, 29th car from engine, causing emergency stop.
8	5-4	Corona	S-J	203	57	Standing	W.E. Grumbles	Brakeman	8	Foot fell on foot while handling L.C.L. freight.
9	5-16	Alamogordo	S-J	218	9	2	Non-trespasser		45	Employee of lumber company caught hand between steel running board and end of building when car was moved.
10	6-13	Alamogordo	S-e	201	89	Standing	W.G. Boswell	Fireman	5	Hand scalded when poppet valve on stoker opened.
11	8-9	High Rolls	S-g	213	18	8	S. Gates	Brakeman	30	Fell to ground when slipped getting off engine.
12	11-24	Vaughn	S-J	205	3	5	Non-trespasser		18	Occupant of outfit car injured when car was struck by cars being handled by engine due to switches being improperly lined.
13	12-24	Luna	#S-J	X-3657-E	70	7	A.R. Sale	Conductor	20	Engine derailed by hatch cover of car on track caused rough stop and injured employee in caboose.
1931										
YEAR 1931										
14	1-14	Deming	S-e	X-3656-W	100	10	M.E. Schmeley	Engineer	14	Struck back of finger against some object opening blow-off cock.
15	2-21	Hargis	S-	2-226	60	12	W. Debo	Brakeman	20	Claims stepped in hole getting off train.
16	4-5	Vaughn	#S-J	X-3655-W	70	6	S.W. VanStone	Brakeman	45	Sudden stop injured employee in caboose when engineer made emergency application of train brakes.
17	5-23	Icehouse Overlook	#S-J	2-410	100	15	H.F. Provenoe	Brakeman	18	Slack ran in when engineer made service application of brakes injuring employee in caboose.
18	6-7	Alamogordo	S-e	X-3653-W	91	Standing	W.G. Boswell	Fireman	15	Particles of cinders and foreign matter penetrated eye.
19	6-16	Carls	S-e	2-426	68	40	A.F. Laifeste	Engineer	9	Hot cinder in left eye.
20	6-26	Rodeo	#S-J	X-5003-W	70	15	H.E. Gilvin	Conductor	30	Service application train brakes caused run-in on rear of train injured employee in caboose.
21	7-5	Elwood	S-J	X-3655-W	70	6	C.E. Roe	Brakeman	4	Slipped on piece of slag while running for caboose after closing switch.
22	7-14	Lordsburg	S-f	412	None at time	6	F.C. Ollerton	Fireman	10	Struck hand on stock chute gate.
23	9-4	Alma	S-J	8	21	Standing	W.C. Archer	Brakeman	16	Piece of ice slipped and struck ankle.
24	12-12	Gage	#S-J	X-3317-W	102	10	R.C. Carden	Brakeman	21	Airhose burst 10th car from engine, causing emergency application of brakes and injured employee in caboose.
1932										
YEAR 1932										
25	1-26	Mills	S-J	X-3415-E	8	3	B.G. Haire	Conductor	90	Fell from car to ground when brakeman cut cars, moving head out just as conductor stepped from one car to another.
26	3-25	Three Rivers	S-J	2-228	58	Standing	I.W. Sampson	Fireman	30	Fell to ground when stepped off running board of engine.
27	5-19	Arma	S-J	X-5029-W	58	Standing	S.B. Warner	Fireman	15	Foot slipped on head rod of switch, lost balance and fell to ground.

Caused by sudden stopping, starting, lurch or jerk of car or train

(Sheet 6 of 9 sheets)

DATE (a)	LOCATION (b)	I.C.C. CLASS (c)	TRAIN NUMBER (d)	NO. CARS IN TRAIN (e)	SPEED (M.P.H.) (f)	PERSON INJURED		ESTIMATED DISABILITY (DAYS) (i)	DESCRIPTION OF ACCIDENT (j)	
						NAME (g)	OCCUPATION (h)			
1932										
YEAR 1932 (CONTINUED)										
28	5-31	Temperli	S-J	X-3307-W	100	25	R.E.Hoffman	Brakeman	30	Airhose blew off 14th car from engine, causing brakes to apply in emergency and injured employe in caboose.
29	7-6	Oecura	S-J	X-3657-E	70	5	C.C.Whittington	Conductor	24	Fell between two cars when stubbed foot against obstruction on top of car.
30	8-29	Alamogordo	S-J	X-3304-W	88	15	F.E.Hedrick	Brakeman	10	Particle of hot cinder blew in right eye.
31	10-4	Lordsburg	S-J	980	62	6	W.H.Trickett	D.H.Conductor	30	Thrown in caboose when engine coupled cabooses to train.
32	11-10	Pintado	S-f	X-3665-W	53	15	C.E.Tillery	Roadway machine oper.	30	Boom of burro-crane swung out from car in train, contacting block signal along side track, causing crane to raise up and then settled back on car injured the employe.
33	11-26	Carrizozo	S-h	994	70	25	2 occupants of automobile		30	Automobile ran into side of train.
34	12-22	Afton	S-e	1-982	69	40	C.B.Hilton	Fireman	7	Cinder in eye account cinders on track struck by engine.
35	12-28	Deming	S-e	X-3635-E	100	Standing	F.R.Hughes	Brakeman	15	Struck knee against ladder when slipped on ice covered ladder on water car.
1933										
YEAR 1933										
36	4-10	North	S-J	X-3695-E	4	Standing	Y.Ortiz	Ex.gang L-b.	15	Rail dislodged on car being unloaded and turned over on employe's foot.
37	5-26	North	S-J	X-3702-E	7	2	D.Footen	Sec. Laborer	12	Finger caught between rail and burro crane boom as rail being loaded on car.
38	7-25	Alamogordo	S-J	X-3304-W	3	10	J.Gomez	Gen.Laborer	8	Thrown out of car by rough coupling during switching operation.
39	10-30	Desert	S-J	994	47	40	J.Moussier	Brakeman	6	Cinder blew in eye.
40	12-6	Polly	S-J	X-3694-E	100	20	A.W.Hardin	Conductor	21	Drawbar pulled out car behind engine causing emergency application of brakes and injury to employe in caboose.
41	12-12	Toboggan	S-J	971	24	12	J.E.Tompkins	Engineer	12	Grain of sand in eye.
42	12-17	Hachita	S-J	X-3019-W	96	15	J.S.McCranie	Brakeman	60	Presumably fell from top of caboose to ground when slack ran in as stop was being made in response to his fusee signal when brakeman was being left.
43	12-22	Carrizozo	S-g	X-2507-E	2	Standing	W.P.Loughrey	Brakeman	8	Fell to ground while descending from top of water car.
44	12-25	Tularosa	S-h	X-3686-W	62	Standing	2 occupants of auto truck		7 and 30	Auto truck ran into side of cars.
1934										
YEAR 1934										
45	3-22	Unknown	S-c	X-3714-W	100	20	V.T.Springer	Fireman	8	Grain of sand in eye.
46	4-19	Kensin	S-J	X-3664-W	10	4	D.Ramirez	Ex.gang Lab.	10	Struck on side of face by piece of lumber rebounding while unloading rail from train.
47	5-9	Wooten	S-J	970	14	3	Passenger		180	Fell to floor of coach as mixed train was making water stop.
48	5-22	Paxton	S-J	X-3659-W	104	38	S.Gates F.J.Ashe	Conductor Brakeman	10 25	Airhose separated 5th car from engine causing emergency application of brakes and injury to employe in caboose.
49	6-24	Afton	S-g	1-982	70	10	J.W.Raley	Brakeman	14	Stepped on piece of ballast detraining from side ladder of car.
50	7-1	Newman	S-J	994	58	35	J.D.Richardson	Engineer	7	Cinders in eye.
51	8-12	Quervo	S-J	X-3716-W	17	Standing	C.N.Lemmon	Brakeman	14	Fell to ground from top of between two standing cars.
52	9-3	Grogrunde	S-J	970	1	5	O.L.Fruitt	Brakeman	20	Stepped on square edge of tie with toes of right foot and sprained foot.
53	9-3	Hawkins	S-J	X-3655-W	66	4	A.A.Dead	Brakeman	13	

32	11-10	Pintado	S-Y	X-3665-W	53	15	C.E. Tillery	Roadway machine oper.	30	Boom of burro-crane coming out from car in train, contacting block signal along side track, causing crane to raise up and when settled back on car injured the employe.
33	11-26	Carrizosa	S-h	994	70	25	2 occupants of automobile		30	Automobile ran into side of train.
34	12-27	Afton	S-e	1-982	69	40	C.B. Hilton	Fireman	7	Cinder in eye account cinders on track struck by engine.
35	12-28	Deming	S-g	X-3655-A	100	Standing	F.R. Hughes	Brakeman	15	Struck knee against ladder when slipped on ice covered ladder on water car.

1933

YEAR 1933

36	4-10	North	S-J	X-3695-B	4	Standing	Y. Ortiz	Ex. gang L.B.	15	Rail dislodged on car being unloaded and turned over on employee foot.
37	5-26	North	S-J	X-3702-X	7	2	D. Wooten	Sec. Laborer	12	Finger caught between rail and burro crane boom as rail being loaded on car.
38	7-25	Alamogordo	S-J	X-3304-W	3	10	J. Jones	Gen. Laborer	8	Thrown out of car by rough coupling during switching operation.
39	10-30	Desert	S-J	994	47	40	J. Mousnier	Brakeman	6	Cinder blew in eye.
40	12-4	Polly	S-J	X-3694-B	100	20	A.W. Hardin	Conductor	21	Drawbar pulled out car behind engine causing emergency application of brakes and injury to employe in caboose.
41	12-12	Toboggan	S-J	971	24	12	J.E. Tompkins	Engineer	12	Grain of sand in eye.
42	12-17	Hashita	S-J	X-5019-W	96	15	J.S. McRanie	Brakeman	60	Presumably fall from top of caboose to ground when slack ran in as stop was being made in response to his fusee signal when brakeman was being left.
43	12-22	Carrizosa	S-g	X-2507-X	2	Standing	W.P. Loughrey	Brakeman	8	Fell to ground while descending from top of water car.
44	12-25	Tularosa	S-h	X-3686-W	62	Standing	2 occupants of auto truck		7 and 30	Auto truck ran into side of cars.

1934

YEAR 1934

45	3-22	Unknown	S-e	X-3714-W	100	20	V.T. Springer	Fireman	8	Grain of sand in eye.
46	4-19	Kenna	S-J	X-3664-W	10	4	D. Ramirez	Ex. gang Lab.	10	Struck on side of face by piece of lumber rebounding while unloading rail from train.
47	5-9	Wooten	S-J	970	14	3	Passenger		180	Fell to floor of coach as mixed train was making water stop.
48	5-22	Paxton	S-J	X-3659-W	104	18	S. Gates F.J. Ashe	Conductor Brakeman	10 25	Air hose separated 5th car from engine causing emergency application of brakes and injury to employee in caboose.
49	6-24	Afton	S-g	1-982	70	10	J.W. Raley	Brakeman	14	Stepped on piece of ballast detraining from side ladder of car.
50	7-1	Newman	S-J	994	58	35	J.D. Richardson	Engineer	7	Cinders in eye.
51	8-12	Quincy	S-J	X-3716-W	17	Standing	C.N. Lemmon	Brakeman	14	Fell to ground from top of between two standing cars.
52	9-3	Orogrande	S-J	970	1	5	O.L. Pruitt	Brakeman	20	Stepped on square edge of tie with toes of right foot and sprained foot.
53	9-3	Hawkins	S-J	X-3655-W	66	4	A.A. Dean	Brakeman	13	Lost footing and fell running to board moving caboose after closing main track switch.
54	9-6	Vaughn	S-J	994	55	8	S.G. Allen	Conductor	180	Fell to ground when lost hand held from near top of side ladder of box car when coupled into with locomotive.
55	10-3	Alamogordo	S-J	992	47	5	C.J. Dingwall	Brakeman	5	Foreign object in eye.
56	10-13	Quincy	S-e	X-3655-W	32	Standing	J.M. Justus	Conductor	7	Fell to ground when lost hand hold on brake wheel while letting off hand brake.
57	10-17	Alamogordo	S-J	970	2	6	C.B. McNeil	Brakeman	5	Hot sand from locomotive in eye.
58	10-21	Deming	S-J	1-980	92	4	R.C. Carden	Conductor	14	Lost hand held on side of car of a out of 18 cars as slack ran out of cuts as speed was reduced just prior to coupling being made.
59	12-1	Carrizosa	S-J	X-3657-W	48	2	J. Adams	Fireman	14	Hot cinder lodged in right eye.
60	12-28	Tularosa	S-J	992	36	Standing	A.L. Walker	Conductor	4	Lost footing on side ladder of car and fell about five feet to ground.

1935

YEAR 1935

61	3-12	Afton	S-J	X-5047-W	100	30	C. Lewis	Conductor	4	Air hose burst 2nd car from engine, causing emergency application of train brakes and injury to employee in caboose.
----	------	-------	-----	----------	-----	----	----------	-----------	---	--

S - Caused by sudden stopping, starting, lurch or jerk of car or train

(Sheet 7 of 9 sheets)

DATE (a)	LOCATION (b)	I.C.C. CLASS (c)	TRAIN NUMBER (d)	NO. CARS IN TRAIN (e)	SPEED (M.P.H.) (f)	PERSON INJURED		ESTIMATED DISABILITY (DAYS) (i)	DESCRIPTION OF ACCIDENT (j)
						NAME (g)	OCCUPATION (h)		
YEAR 1935 (CONTINUED)									
3-26	Carrizozo	S-c	X-3656-L	None at time	1	J.W. Vickery	Brakeman	45	Hand slipped while attempting to adjust coupler on caboose preparatory to coupling engine to caboose.
3-30	Carrizozo	S-j	994	1	4	A. Baldonado	Sta. Laborer	12	Working inside car trying to get horse on feet, lost balance and fell when locomotive coupled into car.
4-2	Heath	S-c	990	57	Standing	H.C. Bargerholt	Fireman	4	Fell to ground when hook slipped off water column spout while attempting move spout over intake opening on top of locomotive tender.
4-1	Tulacum	S-j	X-3699-G	40	Standing	A.G. Newell	Road Foreman of Engines	5	Fell to ground when foot slipped out of coupler carrier of dead engine.
4-17	Vevay	S-j	X-5010-W	100	35	C.E. Hudson	Brakeman	21	Union in brake pipe of car became disconnected, causing emergency stop of train and injury to employee in caboose.
6-4	Galinas	S-j	X-3694-E	42	40	T.J. Gorman	Fireman	4	Opened blow-off cock on locomotive and foreign object struck left eye.
8-14	Sejour	S-j	X-5023-E	100	8	G.O. Brookmiller	Brakeman	5	Action of train when making station stop caused jar of caboose and injury to employee in caboose.
8-25	Orogrande	S-j	X-3718-E	48	5	L.L. Diebig	Brakeman	15	Action of train making station stop resulted in injured employee losing balance and falling against and breaking window of caboose.
7-4	North	S-c	1-992	48	Standing	T.C. Gorman	Fireman	10	Placed hand in stoker mechanism.
8-15	Vevay	S-c	X-3695-W	101	30	E.R. Layton	Engineer	30	Scalded ankles and feet when boiler flue burst.
11-13	Deming	S-j	X-3687-W	67	Standing	J. Folkers	Brakeman	7	Misjudged distance to edge of stock control platform on which standing and stepped backward off platform, falling to ground.
YEAR 1936									
1-5	Deming	S-E	1-980	65	Standing	Occupant of automobile		90	Automobile ran into side of engine of standing train.
1-13	Lordsburg	S-g	X-5030-W	66	8	C.W. Adams	Brakeman	7	Lost footing and fell while detraining from pilot of locomotive.
2-1	Coyote	S-j	X-3692-W	67	6	R.J. Woods	Brakeman	9	Claims stepped on rock or in hole while running to line switch.
2-23	Alamogordo	S-c	X-3691-W	36	Standing	J.B. Perkins	Engineer	14	Finger caught in moving parts of locomotive coal stoker conveyor.
3-7	Deming	S-g	X-5003-E	102	4	J.D. Gomillion	Brakeman	10	Stepped on piece of rock or slag ballast while detraining from moving car.
4-17	Vaughn	S-g	992	54	Standing	C.H. Strauss	Brakeman	20	Slipped and fell to ground from side ladder of car.
4-18	Oscara	S-j	X-3699-E	41	25	J.L. Thompson	Brakeman	45	Fell from gangway of locomotive to ground.
4-26	Deming	S-E	X-3717-E	89	4	1 occupant of automobile 2 occupants of automobile		Killed 30	Automobile ran into side of train.
5-28	Wooten	S-c	X-2511-E	26	Standing	R.C. Skinner	Fireman	30	Caught between water column spout and brakeman's cab on top of tender, due to failure of engineer to properly control slack action in train.
6-1	Vaughn	S-c	X-3655-W	65	Standing	L.W. Rollins	Fireman	20	First degree burns when lost balance and fell while handling bucket hot boiler compound.
6-16	Ancho	S-g	X-3714-W	69	12	G. Ramadale	Conductor	30	Lost hand hold and fell to ground attempting to board rear steps of caboose.
6-17	Alamogordo	S-j	X-3692-W	100	15	P.M. Welch	Brakeman	30	Lost balance and fell from train.
7-18	Hechita	S-c	X-3653-W	50	2	L.L. Barker	Brakeman	20	Lost hand hold and fell from top of car to ground when coupling made during switching.

66	5-17	Vavay	S-J	I-5010-W	100	35	C.E. Hudson	Brakeman	21	Union in brake pipe of car became disconnected, causing emergency stop of train and injury to employee in caboose.
67	6-7	Salinas	S-J	I-3694-W	42	40	E.J. Gorman	Fireman	4	Opened blow-off cock on locomotive and foreign object struck left eye.
68	6-14	Sevier	S-J	I-5023-W	100	8	G.O. Brookmiller	Brakeman	5	Action of train when making station stop caused jar of caboose and injury to employee in caboose.
69	6-25	Orogrande	S-J	I-3716-W	46	5	L.J. Fiebig	Brakeman	15	Action of train making station stop resulted in injured employee losing balance and falling against and breaking window of caboose.
70	7-1	North	S-c	I-992	48	Standing	T.J. Gorman	Fireman	10	Placed hand in stoker mechanism.
71	8-15	Vavay	S-c	I-3695-W	101	10	E.R. Layman	Engineer	30	Scalded ankles and feet when boiler blue burst.
72	11-13	Deming	S-J	I-3687-W	67	Standing	J. Folkers	Brakeman	7	Misjudged distance to edge of stock corral platform on which standing and stepped backward off platform, falling to ground.

1936

YEAR 1936

73	1-5	Deming	S-h	I-980	65	Standing	Occupant of automobile	90	Automobile ran into side of engine of standing train.	
74	1-13	Lordsburg	S-h	I-5030-W	66	8	C.W.Adams	Brakeman	7	Lost footing and fell while detraining from pilot of locomotive.
75	2-1	Coyote	S-J	I-3692-W	67	6	H.J.Woods	Brakeman	9	Claims stepped on rock or in hole while running to line switch.
76	2-23	Alamogordo	S-c	I-3691-W	36	Standing	J.B.Parkins	Engineer	14	Finger caught in moving parts of locomotive coal stoker conveyer.
77	3-9	Deming	S-g	I-5003-W	102	4	J.D.Gommillion	Brakeman	10	Stepped on piece of rock or slag ballast while detraining from moving car.
78	4-17	Vaughn	S-g	992	54	Standing	C.H.Strauss	Brakeman	20	Slipped and fell to ground from side ladder of car.
79	4-18	Ocure	S-J	I-3699-W	41	25	J.L.Thompson	Brakeman	45	Fell from gangway of locomotive to ground.
80	4-26	Deming	S-h	I-3717-W	89	4	1 occupant of automobile 2 occupants of automobile	Killed 30	Automobile ran into side of train.	
81	5-28	Wooten	S-c	I-2511-W	28	Standing	R.C.Skinner	Fireman	30	Caught between water column spout and brakeman's cab on top of tender, due to failure of engineer to properly control slack action in train.
82	6-10	Vaughn	S-c	I-3655-W	65	Standing	L.W.Rolland	Fireman	20	First degree burns when lost balance and fell while handling bucket hot boiler compound.
83	6-16	Ancho	S-g	I-3714-W	69	12	G.Ramsdale	Conductor	30	Lost hand hold and fell to ground attempting to board rear steps of caboose.
84	6-17	Alamogordo	S-J	I-3692-W	100	15	P.M.Welch	Brakeman	30	Lost balance and fell from train.
85	7-18	Hochita	S-d	I-3653-W	50	2	L.L.Barker	Brakeman	20	Lost hand hold and fell from top of car to ground when coupling made during switching.
86	2-22	Orogrande-Alamogordo	S-g	992	61	Unknown	H.W.Brown	B&B helper	15	Foreign object lodged in eye while riding in outfit car.
87	8-2	Alamogordo	S-g	2-992	57	10	A.M.Hardin	Conductor	7	Stepped on some obstruction when detraining from moving car in switching movement.
88	10-25	Aden	S-J	I-5011-W	19	Standing	E.L.Crowe	Brakeman	9	Tie plates falling from car struck leg when car door opened.
89	10-25	Aden	S-J	3-980	70	4	F.A.Felree	Brakeman	5	Foreign object in eye.
90	11-14	Carrisoso	S-h	I-3700-W	28	10	1 occupant of automobile	10	Automobile ran into side of train.	

1937

YEAR 1937

91	1-29	Simmons	S-J	990	53	12	R.R. Griggs	Brakeman	15	Lost balance and jumped from running board of engine.
92	3-1	Montoya	S-J	I-3665-W	40	Standing	C.R. Carter	Student Bkman	7	Strain while assisting in handling L.C.L. freight.
93	3-19	Lordsburg	S-g	I-5004-W	65	10	J.J. McMahon	Conductor	5	Foot slipped on rock ballast covered with oil.
94	4-17	Ancho	S-J	996	48	Standing	J.W. Walters	Student Bkman	2	Caught finger between car door and flangeway while opening car door.
95	4-29	Ancho	S-J	1-992	46	Standing	A. Cebo	Conductor	10	Finger caught between hatch cover and plug of refrigerator car.
96	5-14	Lordsburg	S-d	2-980	70	6	R.B. Miller	Brakeman	26	Lost balance and fell from top of car to ground while operating hand brake when coupling made.

- Caused by sudden stopping, starting, lurch or jerk of car or train

6046

(Sheet 8 of 9 sheets)

(Sheet 8 of 9 sheets)

	DATE (a)	LOCATION (b)	I.C.C. CLASS (c)	TRAIN NUMBER (d)	NO. CARS IN TRAIN (e)	SPEED (M.P.H.) (f)	PERSON INJURED		ESTIMATED DISABILITY (DAYS) (i)	DESCRIPTION OF ACCIDENT (j)
							NAME (g)	OCCUPATION (h)		
1937										
YEAR 1937 (CONTINUED)										
97	6-30	Mongola	S-J	X-4360-W	100	25	C.E. Hudson	Brakeman	21	Sudden stop due to undesired emergency injured employe in caboose.
98	7-4	Gallinas	S-J	X-3655-W	70	5	F.B. Potts	Conductor	14	Reduction of speed of train made more quickly than anticipated, injured employe in caboose.
99	7-7	Anapra	S-J	X-5000-W	65	10	C.L. Matthews	Brakeman	13	Standing in caboose and lost balance when train reduced speed.
100	7-15	Lordsburg	S-J	2-984	58	Standing	L.F. Abbott	Conductor	9	Foreign object lodged in eye.
101	8-6	Polly	S-J	996	44	25	J.A. Handy	Fireman	4	Foreign object striking eye.
102	12-6	Hotel	S-J	970	4	7	O.L. Pruitt	Brakeman	7	Jarred from side running board of tank car to ground when car derailed during switching move.
1938										
YEAR 1938										
103	5-1	Santa Rosa	S-g	990	41	Standing	C.A. Heath	Fireman	7	Slipped and fell on locomotive tender.
104	5-2	Three Rivers	S-J	X-3691-W	66	35	C.C. Word	Brakeman	5	Foreign object lodged in right eye.
105	6-9	Lordsburg	S-g	2-984	66	2	R.E. Harmon	Brakeman	4	Stepped on piece of slag ballast detraining from car.
106	6-22	Deming	S-J	2-980	60	Standing	L.A. Paul	Conductor	30	Hernia right groin when vent plug stuck.
107	6-25	Mongola	S-g	1-982	69	4	R.S. New	Brakeman	4	Stepped on rock while running to throw switch.
108	6-26	Roy	S-J	974	16	Standing	B.W. Higginbotham	Brakeman	42	Lost balance and fell from stock loading platform while assisting in closing stock car door.
109	10-12	Victorio	S-J	X-5001-W	29	35	G.M. Donagan	Brakeman	4	Foreign object lodged in eye.
110	11-12	Rodeo	S-J	X-5009-W	46	Standing	E.E. Robinson	Brakeman	7	Box of freight slipped from hands.
111	11-16	Alamogordo Jet.	S-g	971	22	Standing	1 occupant of auto-truck		30	Auto-truck ran into side of caboose of train.
112	12-1	Afton	S-g	X-4387-W	66	5	J. Jackson	Water Service helper off duty	45	Fell while detraining from car in moving train.
1939										
YEAR 1939										
113	1-19	Deming	S-g	980	70	Standing	E.R. Layman	Engineer	10	Slipped and fell descending from cab of locomotive.
114	2-2	Montoye	S-J	X-3707-W	70	Standing	R.J. Woods	Brakeman	6	Stepped on rock while enroute to caboose after throwing switch.
115	2-12	Stains	S-J	X-5003-W	66	4	S.M. Stinson	Brakeman	7	Slipped on ice when running ahead to throw switch.
116	6-7	Vaughn	S-J	1-996	47	15	W.P. Dolan	Conductor	10	Lost balance and fell while descending from cupola of caboose.
117	6-15	Alamogordo	S-g	990	58	Standing	A.S. Peterson	Fireman	4	Strained shoulder account ash pan hopped door on engine sticking.
118	9-26	Chappel	S-g	4-980	59	35	W.M. Clark	Fireman	5	Foreign object lodged in eye.
119	10-18	Tularosa	S-J	X-3656-W	67	3	L.J. Benson	Conductor	13	Lost balance and fell in caboose as train being brought to a stop.
1940										
YEAR 1940										
120	1-13	Carrirosa	S-J	X-3706-W	93	-	A.R. Taylor	Brakeman	6	Foreign object in eye.
121	2-13	Santa Rosa	S-J	X-3811-W	98	8	A.R. Jones	Conductor	10	Cutting lever 37th car from engine lifted by some unknown person causing air to apply in emergency and injured employes in caboose.
122	2-20						J.W. Hunt	Brakeman	10	

101	8-6	Polly	S-J	996	44	15	J.A.Handy	Fireman	4	Foreign object striking eye.
102	12-6	Hotal	S-J	970	4	7	O.L.Fruitt	Brakeman	7	Jarred from side running board of tank car to ground when car derailed during switching move.
1938										
YEAR 1938										
103	5-1	Santa Rosa	S-c	990	41	Standing	C.A.Heath	Fireman	7	Slipped and fell on locomotive tender.
104	5-2	Three Rivers	S-J	X-3691-W	66	35	C.C.Word	Brakeman	5	Foreign object lodged in right eye.
105	6-9	Lordsburg	S-g	2-984	66	2	R.E.Harmon	Brakeman	4	Stepped on piece of slag ballast detraining from car.
106	6-22	Deming	S-J	2-980	60	Standing	L.A.Mill	Conductor	30	Hernia right groin when vent plug stuck.
107	6-25	Wongola	S-g	1-982	69	4	R.S.New	Brakeman	4	Stepped on rock while running to throw switch.
108	8-26	Roy	S-J	974	16	Standing	B.W.Higginbotham	Brakeman	42	Lost balance and fell from stock loading platform while assisting in closing stock car door.
109	10-12	Victorio	S-J	X-5001-W	29	35	C.M.Donagan	Brakeman	4	Foreign object lodged in eye.
110	11-12	Rodeo	S-J	X-5009-W	46	Standing	E.Robinson	Brakeman	7	Box of freight slipped from hands.
111	11-15	Alamogordo Jct.	S-h	971	22	Standing	1 occupant of auto-truck		30	Auto-truck ran into side of caboose of train.
112	12-1	Afton	S-g	X-4387-W	66	5	J.Jackson	Water Service, helper off duty	45	Fell while detraining from car in moving train.
1939										
YEAR 1939										
113	1-19	Deming	S-g	980	70	Standing	E.R.Layman	Engineer	10	Slipped and fell descending from cab of locomotive.
114	2-2	Montoya	S-J	X-3702-W	70	Standing	R.J.Woods	Brakeman	6	Stepped on rock while enroute to caboose after throwing switch.
115	2-12	Stelma	S-J	X-5003-W	56	4	S.M.Stinson	Brakeman	7	Slipped on ice when running ahead to throw switch.
116	6-7	Vaughn	S-J	1-996	47	15	W.P.Dolan	Conductor	10	Lost balance and fell while descending from cupola of caboose.
117	6-15	Alamogordo	S-c	990	58	Standing	R.S.Peterson	Fireman	4	Strained shoulder account ash pan hopper door on engine sticking.
118	9-26	Chaparral	S-c	4-980	59	35	J.M.Clack	Fireman	5	Foreign object lodged in eye.
119	10-18	Tularosa	S-J	X-3656-W	67	3	L.J.Benson	Conductor	13	Lost balance and fell in caboose as train being brought to a stop.
1940										
YEAR 1940										
120	1-13	Garricose	S-J	X-3734-W	93	7	A.R.Taylor	Brakeman	6	Foreign object in eye.
121	2-13	Santa Rosa	S-J	X-3811-W	98	8	A.R.Jones J.W.Hunt	Conductor Brakeman	10 10	Cutting lever 37th car from engine lifted by some unknown person causing air to apply in emergency and injured employees in caboose.
122	2-20	Vaughn	S-J	X-3805-W	100	Standing	J.L.Chavez	Coal chute foreman	10	Fell on top of engine tender when block on tender turned over when stepped on.
123	3-13	Alamogordo	S-h	970	16	7	1 occupant of automobile		10	Automobile struck by cut of 18 cars being shoved by engine
124	3-26	Stelma	S-J	2-866	61	3	J.E.Pence	Brakeman	20	Foot slipped and turned ankle walking over cattle guard.
125	3-29	Alamogordo	S-J	996	74	6	R.F.Clayton	Brakeman	6	Thrown against hand rail of caboose by adjustment of slack as train was being brought to a stop.
126	4-10	Lordsburg	S-J	X-5023-W	100	8	W.A.Kidd	Brakeman	25	Emergency application of brakes to avoid collision with another engine injured employees in caboose.
127	4-29	Kensin	S-J	1-981	62	Standing	W.E.Huff	Brakeman	7	Foreign object lodged in eye.
128	5-23	Aden	S-g	3-980	59	6	S.R.Montoya	Extra gang laborer off duty	30	Slipped and fell from outfit car and under wheels of car in train moving on siding.
129	6-7	Cavot (M.P.#1127)	D-c	1-845	60	20	H.D.Wester	Brakeman	180	Broken flange 18th car from engine derailed it and 7 following cars. Brakeman Wester, riding on 17th car and as it started to turn over, he fell off car opposite side.

2 - Caused by sudden stopping, starting, lurch or jerk of car or train

(Sheet 9 of 9 sheets)

DATE (a)	LOCATION (b)	I.C.C. CLASS (c)	TRAIN NUMBER (d)	NO. CARS IN TRAIN (e)	SPEED (M.P.H.) (f)	PERSON INJURED		ESTIMATED DISABILITY (DAYS) (i)	DESCRIPTION OF ACCIDENT (j)	
						NAME (g)	OCCUPATION (h)			
1940										
YEAR 1940 (CONTINUED)										
130	6-24	Lisbon	#S-J	X-5023-W	100	40	H.W.Bridges	Brakeman	12	Undesired application of air brakes, threw employe against side portion of caboose cupola.
131	6-28	Akela-Cambray	S-J	X-5033-W	67	10	J.F.Hendrix	Conductor	7	Foreign object lodged in eye.
132	8-5	Gallinas	S-J	996	39	6	R.L.Butler	Brakeman	15	Sprain account hand hold on engine broke off at top.
133	8-18	Nyndus	#S-J	X-3320-W	66	10	G.J.Oullander	Brakeman	10	Thrown against end of caboose when emergency application of brakes made to avoid derailment when wrong switch lined.
134	9-1	Gallinas	S-J	994	76	Standing	O.J.Bradley	Brakeman	60	Foot slipped and fell into manhole of engine tender.
135	10-26	Monquero	S-J	975	27	Standing	R.Whitlock	Brakeman	9	Finger mashed between crate of machinery and floor of truck.
136	11-4	Lordsburg	S-J	2-980	80	Unknown	R.C.East	Brakeman	5	Foreign object entered eye.
137	11-10	Anima	S-J	962	24	Standing	J.S.McGrane	Conductor	4	Cattle loading board fell on instep.
138	11-18	Carrizosa	#S-J	X-3801-W	68	8	L.J.Senson	Conductor	7	Lost balance and fell to floor of caboose due to adjustment of slack.
139	11-26	Lordsburg	S-J	X-5013-W	70	Standing	H.F.Muse	Brakeman	30	Attacked by trespasser.

- Caused by sudden stopping, starting, lurch or jerk of car or train.

Apr. 29, 1941

TRAIN ACCIDENTS

REPORTED TO THE INTERSTATE COMMERCE COMMISSION
YEARS 1930 TO 1940 INCLUSIVE

SOUTHERN PACIFIC COMPANY PACIFIC LINES

STATE OF NEW MEXICO

YEAR	FREIGHT TRAIN		COLLISIONS			DERAILMENTS			OTHER LOCOMOTIVE ACCIDENTS			MISCELLANEOUS TRAIN ACCIDENTS			NUM ACC
	TRAIN MILES (THOUSANDS)	CAR MILES (THOUSANDS)	NUMBER OF ACCIDENTS	NUMBER PER		NUMBER OF ACCIDENTS	NUMBER PER		NUMBER OF ACCIDENTS	NUMBER PER		NUMBER OF ACCIDENTS	NUMBER PER		
				MILLION TRAIN MILES	100 MILLION CAR MILES		MILLION TRAIN MILES	100 MILLION CAR MILES		MILLION TRAIN MILES	100 MILLION CAR MILES		MILLION TRAIN MILES	100 MILLION CAR MILES	
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	
1930	2,026	106,579	4	1.97	3.79	8	3.95	7.58	-	-	-	2	.99	1.89	
1931	1,693	90,092	1	.59	1.11	4	2.37	4.44	3	1.77	3.38	-	-	-	
1932	1,425	74,887	-	-	-	4	2.81	5.34	8	5.61	10.68	1	.70	1.34	
1933	1,234	68,157	1	.81	1.47	-	-	-	5	4.05	7.33	1	.81	1.47	
1934	1,375	76,168	2	1.45	2.65	2	1.45	2.65	4	2.91	5.25	2	1.46	2.62	
1935	1,569	86,706	-	-	-	2	1.27	2.31	3	1.91	3.46	2	1.28	2.30	
TOTAL 1930-1935	9,322	501,589	8	.86	1.59	20	2.14	3.99	23	2.47	4.59	8	.86	1.59	
1936	1,757	91,820	1	.57	1.09	4	2.28	4.36	5	2.84	5.44	1	.57	1.09	
1937	1,916	99,557	1	.52	1.00	6	3.13	6.03	7	3.65	7.03	3	1.57	3.02	
1938	1,747	97,543	-	-	-	5	2.86	5.13	2	1.15	2.05	-	-	-	
1939	1,784	104,419	1	.56	.96	1	.56	.96	4	2.24	3.63	-	-	-	
1940	1,676	109,583	1	.60	.91	10	5.96	9.12	7	4.18	6.39	2	1.19	1.83	
TOTAL 1936-1940	8,880	502,922	4	.45	.80	26	2.93	5.17	25	2.82	4.97	6	.67	1.19	
GRAND TOTAL 1930-1940	18,202	1,004,511	12	.66	1.20	46	2.52	4.58	48	2.64	4.78	14	.77	1.39	

SOURCE: Columns (b) and (c) - Annual Reports of Southern Pacific Company to State Corporation Commission of New Mexico.

illivan)

(ON

C LINES

VE ACCIDENTS		MISCELLANEOUS TRAIN ACCIDENTS			ALL TRAIN ACCIDENTS		
NUMBER PER		NUMBER OF	NUMBER PER		NUMBER OF	NUMBER PER	
ON	100 MILLION		MILLION	100 MILLION		MILLION	100 MILLION
MILES	CAR MILES	ACCIDENTS	TRAIN MILES	CAR MILES	ACCIDENTS	TRAIN MILES	CAR MILES
	(1)	(a)	(a)	(o)	(p)	(q)	(r)
	-	2	.99	1.89	14	6.91	13.26
7	3.35	-	-	-	8	4.73	8.88
1	10.68	1	.70	1.34	13	9.12	17.36
6	7.33	1	.81	1.47	7	5.67	10.27
1	5.25	2	1.46	2.62	10	7.27	13.13
1	3.46	2	1.28	2.30	7	6.46	8.07
7	4.59	8	.86	1.59	59	6.35	11.76
14	5.44	1	.57	1.09	11	6.26	11.98
15	7.03	3	1.57	3.02	17	8.87	17.08
5	2.05	-	-	-	7	4.01	7.13
14	3.83	-	-	-	6	3.36	5.75
18	6.39	2	1.19	1.85	20	11.93	18.25
32	4.97	6	.67	1.19	61	6.87	12.13
34	4.78	14	.77	1.39	120	6.59	11.96

(Sheet 2 of 7 sheets)

TOTAL TRAIN ACCIDENTS BY CLASSES AND LENGTHS OF TRAINS

	YEAR	COLLISIONS		DERAILMENTS		OTHER LOCOMOTIVE ACCIDENTS		MISCELLANEOUS TRAIN ACCIDENTS		ALL TRAIN ACCIDENTS		
		TRAINS 70 CARS AND LESS	OVER 70 CARS	TRAINS 70 CARS AND LESS	OVER 70 CARS	TRAINS 70 CARS AND LESS	OVER 70 CARS	TRAINS 70 CARS AND LESS	OVER 70 CARS	TRAINS 70 CARS AND LESS	OVER 70 CARS	TOTAL
		(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
(1)	1930	4	-	7	1	-	-	1	1	12	2	14
(2)	1931	1	-	4	-	3	-	-	-	8	-	8
(3)	1932	-	-	3	1	8	-	-	1	11	2	13
(4)	1933	1	-	-	-	5	-	1	-	7	-	7
(5)	1934	2	-	2	-	3	1	-	2	7	3	10
(6)	1935	-	-	2	-	2	1	1	1	5	2	7
(7)	TOTAL 1930-1935	8	-	18	2	21	2	3	5	50	9	59
(8)	1936	1	-	4	-	4	1	1	-	10	1	11
(9)	1937	1	-	5	1	7	-	2	1	15	2	17
(10)	1938	-	-	4	1	1	1	-	-	5	2	7
(11)	1939	1	-	1	-	3	1	-	-	5	1	6
(12)	1940	1	-	7	3	5	2	-	2	13	7	20
(13)	TOTAL 1936-1940	4	-	21	5	20	5	3	3	48	13	61
(14)	GRAND TOTAL 1930-1940	12	-	39	7	41	7	6	8	98	22	120

SUMMARY OF ABOVE TRAIN ACCIDENTS AS TO CAUSES AND TRAIN LENGTHS

COLLISIONS		DERAILMENTS		OTHER LOCOMOTIVE ACCIDENTS		MISCELLANEOUS TRAIN ACCIDENTS		ALL TRAIN ACCIDENTS	
70 CARS	OVER	70 CARS	OVER	70 CARS	OVER	70 CARS	OVER	70 CARS	OVER

(1)	1930	4	-	7	1	-	-	1	1	12	2	14
(2)	1931	1	-	4	-	3	-	-	-	8	-	8
(3)	1932	-	-	3	1	8	-	-	1	11	2	13
(4)	1933	1	-	-	-	5	-	1	-	7	-	7
(5)	1934	2	-	2	-	3	1	-	2	7	3	10
(6)	1935	-	-	2	-	2	1	1	1	5	2	7
(7)	TOTAL 1930-1935	8	-	18	2	21	2	3	5	50	9	59
(8)	1936	1	-	4	-	4	1	1	-	10	1	11
(9)	1937	1	-	5	1	7	-	2	1	15	2	17
(10)	1938	-	-	4	1	1	1	-	-	5	2	7
(11)	1939	1	-	1	-	3	1	-	-	5	1	6
(12)	1940	1	-	7	3	5	2	-	2	13	7	20
(13)	TOTAL 1936-1940	4	-	21	5	20	5	3	3	48	13	61
(14)	GRAND TOTAL 1930-1940	12	-	39	7	41	7	6	8	98	22	120

SUMMARY OF ABOVE TRAIN ACCIDENTS AS TO CAUSES AND TRAIN LENGTHS

CAUSE (m)	COLLISIONS		DERAILMENTS		OTHER LOCOMOTIVE ACCIDENTS		MISCELLANEOUS TRAIN ACCIDENTS		ALL TRAIN ACCIDENTS		
	70 CARS AND LESS (n)	OVER 70 CARS (o)	70 CARS AND LESS (p)	OVER 70 CARS (q)	70 CARS AND LESS (r)	OVER 70 CARS (s)	70 CARS AND LESS (t)	OVER 70 CARS (u)	70 CARS AND LESS (v)	OVER 70 CARS (w)	TOTAL (x)
(15) Negligence of Employees	12	-	1	-	-	-	1	-	14	-	14
(16) Defects in or failures of equipment - cars	-	-	23	6	-	-	3	7	26	13	39
(17) Defects in or failures of equipment - locomotives	-	-	1	-	41	7	1	-	43	7	50
(18) Defects in or improper maintenance of way	-	-	11	1	-	-	-	-	11	1	12
(19) Miscellaneous causes	-	-	3	-	-	-	1	1	4	1	5
(20) TOTAL	12	-	39	7	41	7	6	8	98	22	120

NUMBER OF DERAILMENTS CAUSED BY DEFECTS IN OR FAILURES OF FREIGHT CAR EQUIPMENT
 SEGREGATED AS TO TRAINS OF 70 CARS OR LESS AND TRAINS OF OVER 70 CARS
 DESCRIPTION OR NATURE OF DEFECT OR FAILURE OF CAR EQUIPMENT AND LENGTH OF TRAIN INVOLVED

YEAR	TRUCKS		WHEELS & AXLES		AIR BRAKES AND APPURTENANCES		HAND BRAKES AND BRAKE RIGGING		COUPLERS		DRAFT RIGGING		CAR BODIES AND OTHER PARTS OF EQUIPMENT		TOTAL		T
	70 CARS OR LESS	OVER 70 CARS	70 CARS OR LESS	OVER 70 CARS	70 CARS OR LESS	OVER 70 CARS	70 CARS OR LESS	OVER 70 CARS	70 CARS OR LESS	OVER 70 CARS	70 CARS OR LESS	OVER 70 CARS	70 CARS OR LESS	OVER 70 CARS	70 CARS OR LESS	OVER 70 CARS	
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	
1930	2	-	2	1	-	-	-	-	-	-	-	-	-	-	4	1	
1931	2	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	
1932	-	-	1	-	-	-	-	-	-	-	-	-	1	-	2	-	
1933	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
1934	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	
1935	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	
TOTAL 1930-1935	4	-	4	1	-	-	-	-	-	-	1	-	1	-	10	1	
1936	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	
1937	2	1	2	-	-	-	-	-	-	-	-	-	-	-	4	1	
1938	-	-	4	1	-	-	-	-	-	-	-	-	-	-	4	1	
1939	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
1940	1	1	3	2	-	-	-	-	-	-	-	-	-	-	4	3	
TOTAL 1936-1940	3	2	10	3	-	-	-	-	-	-	-	-	-	-	13	5	
GRAND TOTAL 1930-1940	7	2	14	4	-	-	-	-	-	-	1	-	1	-	23	6	

FREIGHT CAR EQUIPMENT
INS OF OVER 70 CARS
AND LENGTH OF TRAIN INVOLVED

RIGGING	CAR BODIES AND OTHER PARTS OF EQUIPMENT		TOTAL		GRAND TOTAL	NUMBER OF DERAILMENTS PER	
	OVER 70 CARS	70 CARS OR LESS	OVER 70 CARS	70 CARS OR LESS		MILLION TRAIN MILES	100 MILLION CAR MILES
(m)	(n)	(o)	(p)	(q)	(r)	(s)	(t)
-	-	-	4	1	5	2.47	4.74
-	-	-	2	-	2	1.18	2.22
-	1	-	2	-	2	1.40	2.67
-	-	-	-	-	-	-	-
-	-	-	1	-	1	.73	1.31
-	-	-	1	-	1	.64	1.15
-	1	-	10	1	11	1.18	2.19
-	-	-	1	-	1	.57	1.09
-	-	-	4	1	5	2.61	5.02
-	-	-	4	1	5	2.86	5.13
-	-	-	-	-	-	-	-
-	-	-	4	3	7	4.18	6.39
-	-	-	15	5	18	2.03	3.58
-	1	-	23	6	29	1.59	2.89

DETAIL OF TRAIN ACCIDENTS
WITH OR WITHOUT CASUALTIES, EXCLUDING TRESPASSERS
ROAD FREIGHT TRAIN OPERATION
REPORTED TO THE INTERSTATE COMMERCE COMMISSION
YEARS 1930 TO 1940 INCLUSIVE

SOUTHERN PACIFIC COMPANY
LINES IN
STATE OF NEW MEXICO

DATE (a)	LOCATION (b)	KIND OF ACCIDENT (c)	I.C.C. CLASS (d)	TRAIN NUMBER (e)	NO. CARS IN TRAIN (f)	SPEED (M.P.H.) (g)	PERSONS INJURED		ESTIMATED DISABILITY (DAYS) (j)	AMOUNT OF DAMAGE (k)	BRIEF DESCRIPTION OF ACCIDENT. (l)
							NAME (h)	OCCUPATION (i)			
YEAR 1930											
1 1-5	North	Derailment	D-c	229	100	30	None	-	-	270	Broken cast iron wheel 42nd car from caboose, previously over- heated, derailed 1 car, damaged 2 others.
2 3-10	Alida	Derailment	D-c	2-228	52	35	None	-	-	990	Loose wheel on 9th car ahead of caboose derailed one car.
3 5-12	Hachita	Misc. Train	M-b	312	54	2	None	-	-	200	Center sill broke on 9th car from engine starting train.
4 6-1	Myndus	Derailment	D-c	2-426	68	40	None	-	-	207	Broken arch bar 34th car from caboose derailed one car.
5 6-21	Lordsburg	Collision	C-h	X-3312-W	6	15	None	-	-	680	Detached cars collided with standing cabooses during switching move by road crew.
6 6-21	Deming	Derailment	D-d	414	11	6	None	-	-	208	Cocked switch derailed 1 car during switching operation.
7 6-23	Lordsburg	Collision	C-h	3-412	70	4	None	-	-	400	Engine with caboose struck standing train too hard.
8 6-23	Tunie	Misc. Train	M-b	X-3310-W	101	6	None	-	-	750	4th car from engine buckled due to emergency application of brakes due to train parting between 11th and 12th cars from caboose account defective lock block.
9 6-16	Continental	Derailment	D-c	X-5029-W	62	25	None	-	-	1,481	Burned off journal 24th car from engine derailed it and follow- ing two cars.
10 8-19	Hargis	Derailment	D-d	228	52	30	None	-	-	19,801	Broken rail derailed 15th to 31st cars from engine.
11 10-18	Apan	Derailment	D-c	2-312	55	35	None	-	-	20,740	Broken truck side on 28th car from engine derailed it and 14 following cars.
12 11-22	Lordsburg	Collision	C-b	X-3686-W	3	4	None	-	-	500	Engine with three cars collided with standing engine during switching move.
13 12-21	Lordsburg	Collision	C-h	X-3302-W	6	4	None	-	-	550	Engine and cars collided with standing engine during switching move.
14 12-1	Anasra	Derailment	D-c	312	60	3	None	-	-	221	Open switch point derailed engine.
YEAR 1931											
15 4-6	Switzer Dam	Collision	C-b	X-2506-W	4	10	None	-	-	350	Engine and head portion of train collided with standing rear portion due to engineer failing to properly control speed.
16 4-20	Arena	Derailment	D-c	X-5033-W	67	25	None	-	-	300	Engine derailed account broken spring hanger pin.
17 5-19	Ridco	Derailment	D-d	125	46	7	None	-	-	300	Derailed 5 cars during switching move when rail turned over under car.
18 6-6	Boysie	Other loco.	L-c	2-226	60	25	None	-	-	350	Main axle broke due to progressive fracture.
19 6-8	Boysie	Derailment	D-d	213	21	11	None	-	-	350	Derailed 6 cars behind engine, apparently caused by rail struck on car just behind engine.
20 7-13	Taylor	Derailment	D-c	209	21	10	None	-	-	314	One car derailed due to journal box bolts shearing off.
21 7-13	Devers	Other loco.	L-b	232	40	30	None	-	-	350	Left main pin failed due to progressive fracture.
22 9-1	Hachita	Other loco.	L-b	312	55	15	None	-	-	300	Middle main rod strap broke due to flaw.

1	1-5	North	Derailment	D-c	229	100	30	None	-	-	270	Broken east iron wheel 42nd car from caboose, previously overheated, derailed 1 car, damaged 2 others.
2	3-10	Kilda	Derailment	D-s	2-228	52	35	None	-	-	990	Loose wheel on 9th car ahead of caboose derailed one car.
3	5-12	Haghigha	Misc. Train	M-b	312	54	2	None	-	-	200	Center sill broke on 9th car from engine starting train.
4	6-1	Nyadus	Derailment	D-c	2-426	68	40	None	-	-	207	Broken arch bar 34th car from caboose derailed one car.
5	6-21	Lordsburg	Collision	C-h	X-3312-W	6	15	None	-	-	880	Detached cars collided with standing cabooses during switching move by road crew.
6	6-21	Reming	Derailment	D-d	414	11	6	None	-	-	402	Cocked switch derailed 1 car during switching operation.
7	6-23	Lordsburg	Collision	C-h	3-412	70	4	None	-	-	400	Engine with caboose struck standing train too hard.
8	6-23	Tunis	Misc. Train	M-b	X-3310-W	101	6	None	-	-	750	4th car from engine buckled due to emergency application of brakes due to train parting between 11th and 12th cars from caboose account defective lock block.
9	8-16	Continental	Derailment	D-c	X-3312-W	62	25	None	-	-	1,481	Burned off journal 24th car from engine derailed it and following two cars.
10	9-15	Hargis	Derailment	D-d	228	52	35	None	-	-	19,801	Broken rail derailed 15th to 31st cars from engine.
11	10-18	Ajan	Derailment	D-c	2-312	55	35	None	-	-	20,740	Broken truck side on 28th car from engine derailed it and 14 following cars.
12	11-22	Lordsburg	Collision	C-b	X-3686-W	3	4	None	-	-	500	Engine with three cars collided with standing engine during switching move.
13	12-21	Lordsburg	Collision	C-h	X-3302-W	6	4	None	-	-	550	Engine and cars collided with standing engine during switching move.
14	12-31	Anapra	Derailment	D-c	312	60	3	None	-	-	221	Open switch point derailed engine.

1931

YEAR 1931

15	4-6	Selton Bank	Collision	C-s	X-2506-W	10	None	-	-	-	250	Engine and head portion of train collided with standing rear portion due to engineer failing to properly control speed.
16	4-20	Arena	Derailment	D-c	X-5033-W	67	25	None	-	-	300	Engine derailed account broken spring bumper pin.
17	5-23	Hoped	Derailment	D-d	125	46	3	None	-	-	300	Derailed 5 cars during switching move when rail turned over under car.
18	6-6	Coyote	Other Loco.	L-c	1-226	60	25	None	-	-	350	Main axle broke due to progressive fracture.
19	6-8	Salinas	Derailment	D-d	412	21	12	None	-	-	350	Derailed 6 cars behind engine, apparently caused by rigid truck on car just behind engine.
20	7-7	Taylor	Derailment	D-c	209	21	10	None	-	-	314	One car derailed due to journal the bolts shearing off.
21	7-31	Oscura	Other Loco.	L-b	232	40	3	None	-	-	350	Left main pin failed due to progressive fracture.
22	9-7	Hesperia	Other Loco.	L-c	312	55	15	None	-	-	300	Middle main rod strap broke due to flaw.

1932

YEAR 1932

23	1-2	Alamogordo	Derailment	D-g	X-3686-W	46	12	None	-	-	575	Derailed 25th, 30th, 36th, 43rd and 44th cars from engine account section foreman changing switch rods for inspection spiked right switch point against rail, leaving left point free.
24	2-28	Duran	Other Loco.	L-c	X-3680-W	44	Standing	None	-	-	300	Main driving axle broken account progressive fracture 94%.
25	2-23	Fennin	Derailment	D-d	2-410	71	5	None	-	-	215	Engine derailed in siding account broken rail.
26	3-23	Winkie	Other Loco.	L-c	2-228	52	15	None	-	-	500	Driving wheel tires slid flat due to engineer holding speed of train with independent brake.
27	3-17	Trigg Spur	Derailment	D-c	X-3413-W	18	10	None	-	-	190	Derailed 3 cars due to middle axle box of car catching in station.
28	3-25	Three Rivers	Derailment	D-c	X-3687-W	70	30	None	-	-	1,077	Broken wheel 33rd car from caboose derailed the one car.

	DATE (a)	LOCATION (b)	KIND OF ACCIDENT (c)	I.C.C. CLASS (d)	TRAIN NUMBER (e)	NO. CARS IN TRAIN (f)	SPEED (M.P.H.) (g)	PERSONS INJURED		ESTIMATED DISABILITY (DAYS) (j)	AMOUNT OF DAMAGE (k)	BRIEF DESCRIPTION OF ACCIDENT (l)
								NAME (h)	OCCUPATION (i)			
YEAR 1932 (CONTINUED)												
29	6-23	Monument	Other Loco.	L-e	960	61	20	None	-	-	300	Broken main axle due to progressive fracture.
30	7-12	Miriam	Other Loco.	L-e	X-5027-W	48	20	None	-	-	180	Broken main axle due to progressive fracture.
31	7-16	Anapra	Misc. Train	M-b	982	91	5	None	-	-	250	End of 26th car from engine pulled out due to emergency application of brakes account broken train line.
32	8-8	Grade	Other Loco.	L-b	X-5012-W	70	25	None	-	-	2,422	Loose cross-head key, shearing rivet in key, allowed cross-head key to come out.
33	9-22	Noria	Other Loco.	L-e	X-5004-W	45	25	None	-	-	250	Main axle broken account progressive fracture.
34	10-6	Vaughn	Other Loco.	L-e	933	None at time	2	None	-	-	250	Broken main axle.
35	11-29	Duran	Other Loco.	L-b	X-3665-W	62	30	None	-	-	300	Left main rod broken account old progressive fracture.
YEAR 1933												
36	1-14	Varney	Misc. Train	M-b	X-3682-W	67	12	None	-	-	710	Two cars damaged when emergency application of brakes occurred to train becoming uncoupled by engine due to low coupler on engine tender.
37	1-25	Gallinas	Other Loco.	L-e	X-3654-W	70	10	None	-	-	225	Main axle on locomotive broke account progressive fracture.
38	3-20	Alamogordo	Other Loco.	L-e	X-3714-W	70	Standing	None	-	-	250	Broken main driving journal account progressive fracture.
39	4-26	Vaughn	Collision	C-h	994	52	2	None	-	-	250	Rear 36 cars standing train started to move account insufficient hand brakes set, and collided with standing 16 cars attached to engine which had moved ahead.
40	6-2	Steins	Other Loco.	L-b	1-868	40	20	None	-	-	400	Piston broke on engine and knocked front cylinder head out of middle cylinder.
41	7-16	Organondo	Other Loco.	L-e	X-3713-W	63	25	None	-	-	300	Main axle on engine broke.
42	10-22	Ford	Other Loco.	L-b	X-5027-W	65	30	None	-	-	300	Middle crank pin broke account progressive fracture.
YEAR 1934												
43	1-26	Deming	Misc. Train	M-b	1-982	100	6	None	-	-	550	Empty stock car 29th from engine buckled as train being brought to a stop.
44	2-7	Alamogordo	Other Loco.	L-b	X-3700-W	61	30	None	-	-	300	Driving journal cut due to ineffective lubrication.
45	4-9	Carrizosa	Collision	C-h	X-3699-W	3	4	None	-	-	450	Engine and 3 cars collided with other cars during switching move by road crew.
46	4-22	Anapra	Misc. Train	M-b	X-3667-W	101	20	None	-	-	892	Five cars damaged when emergency application of brakes occurred due to train parting account coupler shank breaking on 10th car from engine.
47	5-29	Tucumanari	Derailment	D-d	975	25	5	None	-	-	176	Derailed 2 cars account defective frog.
48	5-25	Pelly	Other Loco.	L-e	992	50	30	None	-	-	300	Main axle broke account progressive failure.
49	6-15	Hargis	Other Loco.	L-b	X-3716-W	90	10	None	-	-	200	Left main crank pin worked loose in wheel fit.
50	7-20	Columbus	Other Loco.	L-e	X-5034-W	63	5	None	-	-	250	Main driving axle broken account progressive fracture.
51	8-29	Leoncita	Derailment	D-e	2-994	52	30	None	-	-	660	Coupler pulled out 3rd car from engine and dropped on track derailing three cars, due to failure of engineer to control slack action in train.

35	11-29	Duran	Other Loco.	L-b	X-3665-W	62	30	None	-	-	300	Left main rod broken account old progressive fracture.
1933												
YEAR 1933												
36	1-14	Varney	Misc. Train	M-b	X-3682-W	67	12	None	-	-	710	Two cars damaged when emergency application of brakes occurred to train becoming uncoupled by engine due to low coupler on engine tender.
37	1-25	Gallinas	Other Loco.	L-e	X-3654-W	70	10	None	-	-	225	Main axle on locomotive broke account progressive fracture.
38	3-20	Alamogordo	Other Loco.	L-e	X-3714-W	70	Standing	None	-	-	250	Broken main driving journal account progressive fracture.
39	4-26	Vaughn	Collision	C-h	994	52	2	None	-	-	250	Rear 36 cars standing train started to move account insufficient hand brakes set, and collided with standing 16 cars attached to engine which had moved ahead.
40	6-2	Steins	Other Loco.	L-b	1-868	40	20	None	-	-	400	Piston broke on engine and knocked front cylinder head out of middle cylinder.
41	7-18	Orogrande	Other Loco.	L-e	X-3713-W	63	25	None	-	-	300	Main axle on engine broke.
42	10-29	Ford	Other Loco.	L-b	X-5027-W	65	30	None	-	-	300	Middle crank pin broke account progressive fracture.
1934												
YEAR 1934												
43	1-26	Deming	Misc. Train	M-b	1-982	100	6	None	-	-	550	Empty stock car 29th from engine buckled as train being brought to a stop.
44	2-7	Alamogordo	Other Loco.	L-b	X-3700-W	61	30	None	-	-	300	Driving journal put due to ineffective lubrication.
45	4-9	Carriazo	Collision	C-h	X-3699-W	3	4	None	-	-	450	Engine and 3 cars collided with other cars during switching move by road crew.
46	4-22	Anapra	Misc. Train	M-b	X-3667-W	101	20	None	-	-	892	Five cars damaged when emergency application of brakes occurred due to train parting account coupler shank breaking on 10th car from engine.
47	5-29	Tusumcari	Derailment	D-d	975	25	5	None	-	-	176	Derailed 2 cars account defective frog.
48	5-25	Pelly	Other Loco.	L-e	992	50	30	None	-	-	300	Main axle broke account progressive failure.
49	6-15	Hargis	Other Loco.	L-b	X-3716-W	90	10	None	-	-	200	Left main crank pin worked loose in wheel fit.
50	7-20	Columbus	Other Loco.	L-e	X-5034-W	63	5	None	-	-	250	Main driving axle broken account progressive fracture.
51	8-29	Leoncita	Derailment	D-e	2-994	52	30	None	-	-	660	Coupler pulled out 3rd car from engine and dropped on track derailing three cars, due to failure of engineer to control slack action in train.
52	10-15	Mastodon	Collision	C-h	X-5033-W	48	6	None	-	-	511	Collision between cars of train during switching move due to failure of engineer to promptly and properly act on stop signals.
1935												
YEAR 1935												
53	1-27	Bowen	Derailment	D-h	3-980	65	10	None	-	-	3,123	Engine and 2 cars derailed due to rocks placed on rails by two boys.
54	2-20	Franto	Other Loco.	L-e	1-982	97	30	None	-	-	500	Driving axle on engine broke account progressive fracture.
55	5-12	Afton	Derailment	D-e	4-980	70	35	None	-	-	470	Broken axle on 17th car from caboose derailed the car.
56	6-13	Hashita	Misc. Train	M-b	X-5009-W	65	4	None	-	-	200	Water column damaged due to failure to move spout to proper clearance away from track.
57	7-23	Winkle	Other Loco.	L-b	990	55	30	None	-	-	250	Broken guide bolts on locomotive.
58	9-21	Walnut	Other Loco.	L-b	X-2505-W	4	5	None	-	-	200	Broken main rod strap account progressive failure.
59	11-25	Lanark	Misc. Train	M-b	984	108	35	None	-	-	166	Knuckles slipped by 81st and 82nd cars from engine due to worn knuckle-pin holes, causing emergency application of train brakes resulting in draw bars being pulled out 9th and 18th cars from engine.

Sheet 6 of 7 sheets

Sheet 6 of 7 sheets												
	DATE (a)	LOCATION (b)	KIND OF ACCIDENT (c)	I.C.C. CLASS (d)	TRAIN NUMBER (e)	NO. CARS IN TRAIN (f)	SPEED (M.P.H.) (g)	PERSONS INJURED		ESTIMATED DISABILITY (DAYS) (j)	AMOUNT OF DAMAGE (k)	BRIEF DESCRIPTION OF ACCIDENT (l)
								NAME (h)	OCCUPATION (i)			
1936												
YEAR 1936												
60	3-10	Dona	Other Loco.	L-b	1-980	98	25	None	-	-	465	Middle rod strap broke account 40% progressive fracture.
61	3-22	Cloudercroft	Derailment	D-d	X-2511-W	24	10	None	-	-	756	Car derailed as result of low spot in track and slightly curve worn rail, causing rocking motion of car while moving off 12° to 4° curve on 3.6% descending grade.
62	4-3	Palomas	Other Loco.	L-b	994	49	12	None	-	-	400	Front and middle side rods broke caused by knuckle pin working out due to excessive wear, shearing nut and key.
63	6-7	Aden	Other Loco.	L-c	X-3300-W	61	Standing	None	-	-	350	Main driving axle broken.
64	6-19	Pastura	Other Loco.	L-b	990	53	40	None	-	-	300	Main rod and piston rod bent when guide bolts broke.
65	8-5	Hawks	Derailment	D-g	X-3717-W	38	2	None	-	-	389	Four cars derailed while switching account switch having been previously run through.
66	8-31	Lanark	Misc. Train	M-b	3-980	64	40	None	-	-	350	Car in train damaged by fire from undetermined origin.
67	9-2	Carrizozo	Derailment	D-d	992	2	4	None	-	-	812	Locomotive derailed account defective condition of rail in track.
68	10-19	Winkle	Other Loco.	L-b	1-994	50	35	None	-	-	450	Guide bolts broke account progressive fracture.
69	11-8	Cavot (MP 1126)	Derailment	D-c	X-5019-W	40	18	None	-	-	520	Broken axle - 13th car ahead of caboose, derailed the car.
70	11-8	Lordsburg	Collision	C-d	X-5021-E	2	2	None	-	-	350	Light engine being moved by roundhouse employes from coal chute to delivery track struck engine and two cars being handled by road crew.
1937												
YEAR 1937												
71	1-13	Ladin	Other Loco.	L-b	1-980	67	35	None	-	-	350	Middle main rod broke account old fracture.
72	2-7	Ulmorris	Derailment	D-c	X-5028-W	61	35	None	-	-	17,955	Car derailed account car journal burned off due to overheating and ran on ties for about 4 miles.
73	2-16	Coyote	Other Loco.	L-b	X-3686-W	70	35	None	-	-	2,651	Guide bolts failed account progressive fracture.
74	2-24	Hargis	Derailment	D-c	1-992	51	35	None	-	-	1,179	Journal broke on 11th car ahead of caboose derailing car.
75	3-13	Columbus	Derailment	D-c	964	42	25	None	-	-	214	One car derailed account failure of truck side.
76	3-23	Hermosa	Misc. Train	M-b	X-3304-W	35	30	None	-	-	1,908	Journal failed on car
77	4-27	Kensia	Misc. Train	M-b	X-5031-W	100	40	None	-	-	175	Train parted, damaging equipment, due to conductor stopping train by use of conductor's valve in caboose.
78	5-19	Santa Rosa	Other Loco.	L-c	X-3699-W	70	15	None	-	-	443	Broken main driving axle due to progressive fracture.
79	6-5	Grade	Collision	C-h	X-5028-W	59	4	None	-	-	600	Engine shoving caboose collided with out of cars that were to be picked up in train.
80	7-1	Cuervo	Misc. Train	M-b	X-3716-W	70	12	None	-	-	250	M.O.W. car in train damaged when air applied from caboose to stop train.
81	7-3	Lizard	Derailment	D-c	X-5019-W	100	25	None	-	-	868	Four cars derailed account truck bolster and truck frame "locking" on 15th car from caboose.
82	7-4	Palmas	Other Loco.	L-b	990	52	20	None	-	-	250	Left main pin bent account breaking or shearing of tapered pin of combination lever.
83	7-9	Potrillo	Other Loco.	L-c	X-5027-W	32	6	None	-	-	300	Main driving axle broken while switching.
84	8-18	Mongola	Other Loco.	L-c	1-980	69	35	None	-	-	220	Main driving tire broke.
85	8-22	Mongola	Derailment	D-c	3-980	70	35	None	-	-	234	Broken truck side frame derailed, 22nd car from caboose.

65	8-5	Hawks	Derailment	D-g	X-3717-W	38	2	None	-	-	389	Four cars derailed while switching account switch having been previously run through.
66	8-31	Lamar	Misc. Train	M-b	3-980	64	40	None	-	-	350	Car in train damaged by fire from undetermined origin.
67	9-2	Garrigose	Derailment	D-d	.992	2	4	None	-	-	812	Locomotive derailed account defective condition of rail in track.
68	10-19	Winkle	Other Loco.	L-b	1-994	50	35	None	-	-	450	Guide bolts broke account progressive fracture.
69	11-8	Cavot (MP 1126)	Derailment	D-c	X-5019-W	40	18	None	-	-	520	Broken axle - 13th car ahead of caboose, derailed the car.
70	11-8	Lordsburg	Collision	C-d	X-5021-X	2	2	None	-	-	350	Light engine being moved by roundhouse employee from coal chute to delivery track struck engine and two cars being handled by road crew.

1937

YEAR 1937

71	1-13	Ladin	Other Loco.	L-b	1-980	67	35	None	-	-	350	Middle main rod broke account old fracture.
72	2-7	Ulmorris	Derailment	D-c	X-5028-W	61	35	None	-	-	17,955	Car derailed account car journal burned off due to overheating and ran on ties for about 4 miles.
73	2-16	Coyote	Other Loco.	L-b	X-3686-W	70	35	None	-	-	2,651	Guide bolts failed account progressive fracture.
74	2-24	Hargis	Derailment	D-c	1-992	51	35	None	-	-	1,179	Journal broke on 11th car ahead of caboose derailling car.
75	3-13	Columbus	Derailment	D-c	964	42	25	None	-	-	214	One car derailed account failure of truck side.
76	3-23	Hermanns	Misc. Train	M-b	X-3304-W	35	30	None	-	-	1,908	Journal failed on car
77	4-27	Kensia	Misc. Train	M-b	X-5031-W	100	40	None	-	-	175	Train parted, damaging equipment, due to conductor stopping train by use of conductor's valve in caboose.
78	5-19	Santa Rosa	Other Loco.	L-c	X-3699-W	70	15	None	-	-	443	Broken main driving axle due to progressive fracture.
79	6-5	Grade	Collision	C-b	X-5728-W	59	4	None	-	-	600	Engine shoving caboose collided with cut of cars that were to be picked up in train.
80	7-1	Cuervo	Misc. Train	M-b	X-3716-W	70	12	None	-	-	250	M.O.V. car in train damaged when air applied from caboose to stop train.
81	7-3	Lizard	Derailment	D-c	X-5019-W	100	25	None	-	-	868	Four cars derailed account truck bolster and truck frame "locking" on 15th car from caboose.
82	7-9	Palmas	Other Loco.	L-b	990	52	20	None	-	-	250	Left main pin bent account breaking or shearing of tapered pin of combination lever.
83	7-9	Potrillo	Other Loco.	L-c	X-5027-W	32	6	None	-	-	300	Main driving axle broken while switching.
84	8-18	Mongola	Other Loco.	L-c	1-980	69	35	None	-	-	220	Main driving tire broke.
85	8-22	Mongola	Derailment	D-c	3-980	70	35	None	-	-	234	Broken truck side frame derailed 22nd car from caboose.
86	10-21	Oregrande	Other Loco.	L-b	994	70	Standing	None	-	-	250	Cross-head and driving journal damaged.
87	10-31	Strauss	Derailment	D-d	X-3702-W	45	10	None	-	-	250	Derailed 13th car from engine, due to improper elevation in track on turn-out.

1938

YEAR 1938

88	3-9	Nondal	Derailment	D-c	X-5031-W	63	35	None	-	-	16,599	Loco's wheel 23rd car from engine derailed car and damaged track.
89	4-2	Aden	Derailment	D-c	2-984	62	20	None	-	-	2,703	Car derailed account overheated journal burning off.
90	5-6	Denn	Other Loco.	L-c	2-984	85	35	None	-	-	155	Main driving tire broke account flaw.
91	6-9	Lordsburg	Derailment	D-c	1-984	68	6	None	-	-	478	Broken flange 25th car from caboose derailed it and 2 other cars.
92	6-23	Large	Other Loco.	L-b	X-3717-W	50	30	None	-	-	2,000	Engine damaged account back end main rod wedge breaking.
93	12-6	Wilma	Derailment	D-c	X-3687-W	95	35	None	-	-	5,249	Broken overheated wheel derailed one car.
94	12-14	Lisard	Derailment	D-c	1-980	68	30	None	-	-	2,780	Loco's wheel 7th car from engine derailed the car.

6054

	DATE	LOCATION	KIND OF ACCIDENT	I.C.C. CLASS	TRAIN NUMBER	NO. CARS IN TRAIN	SPEED (M.P.H.)	PERSONS INJURED		ESTIMATED DISABILITY (DAYS)	AMOUNT OF DAMAGE	BRIEF DESCRIPTION OF ACCIDENT
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	NAME	OCCUPATION	(j)	(k)	(l)
1939												
YEAR 1939												
95	2-10	Vaughn	Derailement	D-e	X-3699-W	70	5	None	-	-	236	Engine pony truck derailed account frozen cinders and snow on rails.
96	7-16	Tecolote	Other Loco.	L-b	X-3700-W	47	35	None	-	-	200	Left piston became loose in cross-head.
97	9-5	Steins	Other Loco.	L-c	2-866	70	15	None	-	-	500	Axle broke on engine.
98	9-23	El Paso-Lordsburg	Other Loco.	L-c	3-981	55	-	None	-	-	500	Driving tires slid flat account failure of engineer to properly handle air brakes on engine.
99	11-29	Santa Rosa	Collision	C-h	996 X-3806-W	105 67	8 Standing	None	-	-	936	Engine of No. 996 backing on main track with 35 cars behind engine collided with caboose of Extra 3806 West standing on main track.
100	12-3	Lanark	Other Loco.	L-c	X-3700-W	89	20	None	-	-	175	Cut journal on main driver of engine.
1940												
YEAR 1940												
101	1-5	Mongola	Misc. Train	M-b	X-5023-W	99	40	None	-	-	225	Equipment damaged account of emergency application of brake from caboose.
102	1-22	Santa Rosa	Misc. Train	M-b	X-3802-W	89	3	None	-	-	203	Unknown person stepped on cutting lever 14th car from caboose causing emergency application of brakes and damaged 1st car 16th car from engine.
103	2-7	Russia	Derailement	D-d	971	18	15	None	-	-	418	Six cars derailed account wide gage of track.
104	2-25	Desert	Derailement	D-c	994	70	40	None	-	-	398	Broken truck side derailed one car.
105	2-28	Mongola	Other Loco.	L-b	X-3704-W	61	35	None	-	-	350	Broken main pin on locomotive.
106	3-12	Akela	Derailement	D-g	X-5020-W	65	40	None	-	-	5,005	Broken overheated wheel derailed 4 cars.
107	3-21	Vovay	Derailement	D-c	1-980	100	40	None	-	-	200	Broken truck side derailed one car.
108	4-26	Cox Canon	Derailement	D-i	971	17	12	None	-	-	225	Two cars derailed account improperly balanced load of logs on
109	5-15	Torrance	Other Loco.	L-e	X-3808-W	100	18-20	None	-	-	1,890	Undesired emergency application of brakes due to some object striking branch pipe on car, slid drivers on engine.
110	5-31	Deming	Other Loco.	L-c	3-981	61	10	None	-	-	265	Driving axle broke.
111	6-7	Cavot (MP 1127)	Derailement	D-c	1-845	60	20	H.D. Wester	Brakeman	180	6,320	Broken flange 18th car from engine, derailed it and 7 follow cars. Injured brakeman was riding on 19th car from engine.
112	7-21	Anapra	Derailement	D-c	962	38	4	None	-	-	1,047	During back-up movement of 12 cars, wheel on rear truck split

Defendant's Exhibit No. 389 (Witness J.J. Sullivan)

COMPARISON OF
NUMBER, AND ACCIDENT RATE PER MILLION FREIGHT TRAIN MILES AND
PER 100 MILLION FREIGHT TRAIN CAR MILES
DERAILMENTS DUE TO DEFECTS IN OR FAILURES OF FREIGHT CAR EQUIPMENT
NEW MEXICO, ARIZONA AND NEVADA
1930 TO 1940 INCLUSIVE
AS REFLECTED IN EXHIBIT NO. 388 COVERING NEW MEXICO,
EXHIBIT NO. 286 COVERING ARIZONA; AND EXHIBIT NO. 287 COVERING NEVADA

	Exh. <u>388</u>	Exh. 286	Exh. 287	Exh. <u>388</u>	Exh. 286	Exh. 287	Exh. <u>388</u>	Exh. 286	Exh. 287
	NUMBER OF DERAILMENTS			TRAIN MILE BASIS			CAR MILE BASIS		
YEAR (a)	NEW MEXICO (b)	ARIZONA (c)	NEVADA (d)	NEW MEXICO (e)	ARIZONA (f)	NEVADA (g)	NEW MEXICO (h)	ARIZONA (i)	NEVADA (j)
1930	5	5	5	2.47	1.94	2.43	4.74	3.53	3.38
1931	2	4	3	1.18	1.81	1.76	2.22	3.33	2.43
1932	2	1	-	1.40	.54		2.67	.99	-
1933	-	3	2	-	1.84	1.47	-	3.29	1.91
1934	1	2	3	.73	1.11	1.98	1.31	1.95	2.46
1935	1	3	-	.64	1.43	-	1.15	2.53	-
TOTAL 1930-1935	11	18	13	1.18	1.48	1.34	2.19	2.67	1.77
1936	1	2	4	.57	.82	2.07	1.09	1.51	2.76
1937	5	12	5	2.61	4.32	2.49	5.02	8.10	3.30
1938	5	4	3	2.86	1.74	1.82	5.13	3.08	2.28
1939	-	2	1		.78	.55	-	1.40	.69
1940	7	4	5	4.18	1.44	2.44	6.39	2.57	3.04
TOTAL 1936-1940	18	24	18	2.03	1.87	1.91	3.58	3.38	2.45
GRAND TOTAL 1930-1940	29	42	31	1.59	1.68	1.62	2.89	3.03	2.11

Defendant's Exhibit No. 890 (Witness J. J. Sullivan)
Apr. 29, 1941

TRAIN ACCIDENTS
SHOWING CLASSES AND CAUSES
CLASS I RAILROADS OF THE UNITED STATES
REFLECTED BY STATISTICS OF THE INTERSTATE COMMERCE COMMISSION
YEARS 1923 TO 1939, INCLUSIVE

	YEAR	TOTAL LOCOMOTIVE MILES (THOUSANDS)	TOTAL TRAIN MILES (THOUSANDS)	TOTAL CAR MILES (THOUSANDS)	COLLISIONS				TOTAL NUMBER OF COLLISIONS	DERAILMENTS				TOTAL NUMBER OF DERAIL- MENTS	LOCOMOTIVE & BOILER ACCIDENTS		
					CAUSE					CAUSE					CAUSE		
					NEGLECTANCE OF EMPLOYEES	DEFECTS IN OR FAILURES OF EQUIPMENT	DEFECTS IN OR IMPROPER MAINTENANCE OF WAY AND STRUCTURES	MISCEL- LANEOUS		NEGLECTANCE OF EMPLOYEES	DEFECTS IN OR FAILURES OF EQUIPMENT	DEFECTS IN OR IMPROPER MAINTENANCE OF WAY AND STRUCTURES	MISCEL- LANEOUS		NEGLECTANCE OF EMPLOYEES	DEFECTS IN OR FAILURES OF EQUIPMENT	MISCEL- LANEOUS
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	
(1)	1923	1,756,170	1,245,099	29,432,500	5,962	665	15	319	6,961	1,597	8,356	3,589	2,720	16,262	46	6	15
(2)	1924	1,672,564	1,204,302	28,889,085	4,379	429	9	231	5,068	1,345	6,640	3,501	2,423	13,909	28	7	7
(3)	1925	1,697,798	1,220,846	30,785,543	4,464	354	7	220	5,045	1,386	5,712	3,115	2,191	12,404	18	5	6
(4)	1926	1,776,071	1,248,997	32,666,043	4,597	359	14	219	5,199	1,365	5,514	3,064	2,246	12,209	23	1	2
(5)	1927	1,728,040	1,220,957	32,462,178	4,168	310	14	206	4,698	1,310	5,082	2,561	2,099	11,652	16	2	1
(6)	1928	1,698,744	1,202,678	32,994,940	3,735	266	5	186	4,192	1,254	4,558	2,059	1,753	9,624	23	1	-
(7)	TOTAL 1923-1928	10,331,407	7,342,809	187,230,289	27,325	2,383	64	1,380	31,152	8,257	35,862	17,909	13,432	75,460	153	22	31
(8)	PERCENTAGE OF TOTAL SHOWN IN COLUMN (dd)				21.99	1.92	.05	1.11	25.07	6.64	28.85	24.41	10.81	60.71	.13	.02	.02
(9)	1929	1,731,883	1,214,360	33,828,943	5,417	269	2	145	4,333	1,445	4,463	1,923	1,728	9,557	11	3	2
(10)	1930	1,550,246	1,106,386	30,177,596	3,654	183	7	72	2,916	1,090	3,242	1,277	1,141	6,750	27	-	1
(11)	1931	1,327,467	965,181	25,608,792	1,710	82	-	94	1,886	749	2,024	869	825	4,457	11	3	-
(12)	1932	1,104,953	821,158	20,350,867	1,125	69	-	45	1,239	515	1,467	634	626	3,244	8	-	-
(13)	1933	1,080,016	786,720	20,597,254	1,088	62	1	37	1,188	457	1,478	613	637	3,167	11	3	1
(14)	1934	1,124,043	818,473	22,179,787	1,185	52	3	51	1,291	457	1,640	612	684	3,393	16	6	1
(15)	TOTAL 1929-1934	7,918,608	5,712,278	152,743,229	11,679	717	13	444	18,853	4,713	14,374	5,932	5,639	30,596	81	13	5
(16)	PERCENTAGE OF TOTAL SHOWN IN COLUMN (dd)				21.75	1.33	.03	.83	23.94	8.78	26.66	11.05	10.50	56.99	15	.03	.01
(17)	1935	1,149,494	829,198	22,512,243	1,130	55	-	37	1,222	510	1,727	754	836	3,697	7	1	-
(18)	1936	1,285,048	905,749	25,548,229	1,575	83	4	64	1,726	612	2,283	945	950	4,790	13	1	-
(19)	1937	1,310,846	933,219	26,448,096	1,610	76	2	72	1,760	644	2,065	960	1,021	4,690	11	7	-
(20)	1938	1,132,482	825,682	23,741,538	1,027	50	2	44	1,123	457	1,249	654	741	3,100	11	3	-
(21)	1939	1,190,362	853,179	25,258,741	1,326	58	5	40	1,429	573	1,152	652	701	3,083	12	1	1
(22)	TOTAL 1935-1939	6,068,032	4,347,027	123,348,941	6,668	322	13	257	7,260	2,796	8,550	3,965	4,249	19,560	49	13	1
(23)	PERCENTAGE OF TOTAL SHOWN IN COLUMN (dd)				19.60	.96	.04	.76	21.56	8.30	25.39	11.77	12.62	59.07	.14	.04	.01

	YEAR	MISCELLANEOUS TRAIN ACCIDENTS					ALL TRAIN ACCIDENTS					NUMBER OF ACCIDENTS PER					NUMBER OF CASUALTIES	
		CAUSE					CAUSE										TRAINMEN AND ENGINEERS	
		NEGLECTANCE OF EMPLOYEES	DEFECTS IN OR FAILURES OF EQUIPMENT	DEFECTS IN OR IMPROPER MAINTENANCE OF WAY AND STRUCTURES	MISCEL- LANEOUS	TOTAL NUMBER OF MISCELLANEOUS TRAIN ACCIDENTS	NEGLECTANCE OF EMPLOYEES	DEFECTS IN OR FAILURES OF EQUIPMENT	DEFECTS IN OR IMPROPER MAINTENANCE OF WAY AND STRUCTURES	MISCEL- LANEOUS	TOTAL NUMBER OF ALL-TRAIN ACCIDENTS	MILLION LOCOMOTIVE MILES	MILLION TRAIN MILES	100 MILLION CAR MILES			KILLED	INJURED
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
(24)	1923	351	1,699	7	561	2,618	7,956	11,690	3,611	3,615	26,972	15.30	21.18	91.30			242	1,597
(25)	1924	261	1,359	6	494	2,110	6,033	9,166	3,516	3,145	21,880	13.08	18.17	75.74			168	1,209
(26)	1925	255	1,286	11	507	2,059	6,123	8,098	3,133	2,924	20,275	11.94	16.61	65.87			179	1,157
(27)	1926	255	1,286	11	507	2,059	6,123	8,098	3,133	2,924	20,275	11.94	16.61	65.87			179	1,157

AL NR F IL IS	LOCOMOTIVE BOILER ACCIDENTS				OTHER LOCOMOTIVE ACCIDENTS	
	CAUSE			TOTAL NUMBER OF LOCO. BOILER ACCIDENTS	CAUSE	
	NEGLIGENCE OR EMPLOYEES	DEFECTS IN OR FAILURES OF EQUIPMENT	MISCEL- LANEOUS		DEFECTS IN OR FAILURES OF EQUIPMENT	TOTAL NUMBER OF OTHER LOCOMOTIVE ACCIDENTS
	(o)	(p)	(q)		(s)	(t)
52	46	6	15	67	964	964
09	28	7	7	42	751	751
04	18	3	8	29	741	741
09	23	1	2	26	721	721
52	16	2	1	21	649	649
24	23	1	-	24	542	542
60	153	22	31	209	4,368	4,368
71	.13	.02	.02	.17	3.51	3.51
57	11	3	2	16	704	704
50	27	-	1	28	739	739
67	11	3	-	14	631	631
44	8	-	-	8	520	520
69	11	3	1	15	455	455
93	16	6	1	23	530	530
92	83	13	5	104	3,578	3,578
99	15	.03	.01	.19	6.66	6.66
97	7	1	-	8	527	527
96	13	1	-	14	567	567
90	11	7	-	18	614	614
00	11	3	-	14	493	493
63	7	1	1	9	511	511
60	49	13	1	63	2,812	2,812
02	.14	.04	.01	.19	8.35	8.35

ACCIDENTS

ON N S F	EVENTS PER 100 MILLION CAR MILES	NUMBER OF CASUALTIES TO TRAINMEN AND ENGINEERS IN THESE ACCIDENTS			NUMBER OF CASUALTIES TO TRADESMEN AND ENGINEERS PER		
		KILLED (hh)	INJURED (ii)	TOTAL (jj)	MILLION LOCOMOTIVE MILES (kk)	MILLION TRAIN MILES (ll)	100 MILLION CAR MILES (mm)
6	01.30	242	1,597	1,839	1.05	1.48	6.25
7	75.74	169	1,209	1,377	.82	1.14	4.77
1	65.87	179	1,157	1,336	.79	1.09	4.34
2	61.99	156	1,265	1,421	.80	1.14	4.35
5	57.03	148	921	1,069	.62	.88	3.29
2	49.98	116	917	1,033	.61	.86	3.13
65	AVERAGE				AVERAGE	AVERAGE	AVERAGE
3	65.38	1,909	7,056	8,975	.75	1.10	4.31

	YEAR	NEGLIGENCE OF EMPLOYEES (a)	IN OR FAILURES OF EQUIPMENT (v)	MAINTENANCE OF WAY AND STRUCTURES (s)	MISCELL- ANEOUS (x)	MISCELLANEOUS TRAIN ACCIDENTS (y)	NEGLIGENCE OF EMPLOYEES (z)	IN OR FAILURES OF EQUIPMENT (aa)	MAINTENANCE OF WAY AND STRUCTURES (bb)	MISCELL- ANEOUS (cc)	ANNUAL NUMBER OF ALL TRAIN ACCIDENTS (dd)	MILLION LOCOMOTIVE MILES (ee)	MILLION TRAIN MILES (ff)	100 MILLION CAR MILES (gg)	TRAINMEN AND IN THESE KILLED (hh)	INJURED (ii)
(24)	1923	351	1,699	7	551	2,618	7,956	11,590	3,611	3,615	26,872	15.30	21.58	91.30	242	1,151
(25)	1924	261	1,359	6	484	2,110	6,053	9,186	3,516	3,145	21,880	13.08	18.17	75.74	166	1,151
(26)	1925	255	1,236	11	507	2,059	6,123	8,098	3,133	2,924	20,278	11.94	16.61	65.87	179	1,151
(27)	1926	286	1,233	10	578	2,107	6,271	7,828	3,108	3,044	20,251	11.39	16.22	61.99	156	1,151
(28)	1927	279	1,282	4	527	2,092	5,775	7,325	2,579	2,835	18,512	10.71	15.16	57.65	148	959
(29)	1928	298	1,242	6	563	2,110	5,310	6,610	2,070	2,502	16,492	9.71	13.71	49.98	116	959
(30)	TOTAL 1923-1928	1,750	8,102	44	3,220	13,096	37,468	50,737	18,017	18,063	124,285	AVERAGE 12.03	AVERAGE 16.93	AVERAGE 66.38	1,009	7.0
(31)	PERCENTAGE OF TOTAL SHOWN IN COLUMN (dd)	1.39	6.52	.04	2.59	10.54	30.15	40.82	14.50	14.53	100.00					
(32)	1929	454	1,134	13	526	2,127	5,827	6,573	1,938	2,399	16,737	9.66	13.78	49.48	135	959
(33)	1930	368	816	12	399	1,585	4,139	4,979	1,298	1,603	12,017	7.75	10.66	39.82	111	959
(34)	1931	224	415	9	280	928	2,694	3,155	878	1,199	7,926	5.97	8.21	30.95	85	959
(35)	1932	140	257	4	240	641	1,788	2,313	640	911	5,652	5.12	6.83	27.77	57	959
(36)	1933	114	297	6	211	630	1,670	2,295	624	886	5,475	5.07	6.95	26.59	59	959
(37)	1934	126	263	9	251	649	1,784	2,431	624	987	5,886	5.24	7.19	26.54	68	959
(38)	TOTAL 1929-1934	1,426	3,182	55	1,897	6,560	17,902	21,806	6,000	7,985	53,693	AVERAGE 6.78	AVERAGE 9.40	AVERAGE 35.15	535	2.8
(39)	PERCENTAGE OF TOTAL SHOWN IN COLUMN (dd)	2.66	5.73	.10	3.53	12.22	33.34	40.61	11.18	14.87	100.00					
(40)	1935	152	247	2	313	713	1,799	2,627	758	1,183	6,369	5.34	7.69	23.23	50	959
(41)	1936	206	336	7	348	897	2,406	3,376	956	1,362	6,094	6.30	8.94	31.63	107	959
(42)	1937	243	300	9	356	908	2,508	3,082	971	1,449	7,990	6.10	8.56	29.76	104	959
(43)	1938	166	237	12	267	682	1,661	2,031	668	1,052	5,412	4.78	6.55	23.59	76	959
(44)	1939	202	276	10	297	785	2,108	2,003	667	1,039	5,017	4.89	6.62	23.03	75	959
(45)	TOTAL 1935-1939	969	1,396	40	1,581	3,986	10,492	13,063	4,018	6,089	33,681	AVERAGE 5.55	AVERAGE 7.75	AVERAGE 27.31	422	2.8
(46)	PERCENTAGE OF TOTAL SHOWN IN COLUMN (dd)	2.83	4.14	.12	4.69	11.83	31.12	38.87	11.93	18.03	100.00					

COMPARISON OF AVERAGE ACCIDENT AND CASUALTY RATES

PERIOD 1929 - 1934 COMPARED WITH PERIOD 1923 - 1928	DECREASE	43.64%	44.43%	47.05%
PERIOD 1935 - 1939 COMPARED WITH PERIOD 1929 - 1934	DECREASE	18.14%	17.55%	22.30%
PERIOD 1935 - 1939 COMPARED WITH PERIOD 1923 - 1928	DECREASE	53.87%	54.22%	58.66%
YEAR 1939 COMPARED WITH YEAR 1923	DECREASE	68.01%	68.40%	74.76%

SOURCE: Interstate Commerce Commission, Bureau of Statistics, publications.

Column (b) - Annual Accident Bulletins, Table No. 101 for years 1923 and 1924; Table No. 97 for subsequent years.
Columns (c) and (d) - Statistics of Railways, Statements Nos. 30 and 31, issue of 1928 for years 1923 to 1928, inclusive;
Tables No. 53 and 55 issue of 1939 for years 1929 to 1939 inclusive.
Columns (e) to (y) - Annual Accident Bulletins, Table No. 101.
Columns (hh) and (ii) - Annual Accident Bulletins, Table No. 102.
Columns (z) to (ms) - Computations.

ACCIDENTS

RANK	ACCIDENTS PER 100 MILLION CAR MILES	NUMBER OF CASUALTIES TO TRAINMEN AND ENGINEERS IN THESE ACCIDENTS			NUMBER OF CASUALTIES TO TRAINMEN AND ENGINEERS PER MILLION		
		KILLED	INJURED	TOTAL	LOCOMOTIVE MILES	TRAIN MILES	CAR MILES
		(hh)	(ii)	(jj)	(kk)	(ll)	(mm)
3	91.50	242	1,597	1,839	1.05	1.48	8.25
2	75.74	168	1,209	1,377	.82	1.14	4.77
1	65.87	179	1,157	1,336	.79	1.09	4.34
2	61.99	156	1,265	1,421	.80	1.14	4.35
4	57.03	148	921	1,069	.62	.88	3.29
1	49.98	116	917	1,033	.61	.86	3.13
GR	AVERAGE				AVERAGE	AVERAGE	AVERAGE
3	86.38	1,009	7,036	8,075	.78	1.10	4.31
3	49.48	135	791	926	.53	.76	2.74
6	39.82	111	516	627	.40	.57	2.08
1	30.95	85	343	428	.32	.44	1.67
3	27.77	57	282	339	.31	.41	1.67
6	26.58	59	291	350	.32	.44	1.70
9	26.54	69	296	364	.34	.47	1.73
GR	AVERAGE				AVERAGE	AVERAGE	AVERAGE
0	35.15	535	2,519	3,054	.39	.53	2.00
9	23.23	60	293	353	.31	.43	1.57
4	31.63	107	409	516	.40	.57	2.02
4	29.76	104	395	499	.38	.53	1.86
5	23.39	76	274	350	.31	.42	1.51
2	23.03	75	296	373	.31	.44	1.48
GR	AVERAGE				AVERAGE	AVERAGE	AVERAGE
5	27.31	422	1,669	2,091	.34	.48	1.70

5%	47.05%	50.00%	51.84%	53.60%
5%	22.30%	12.82%	9.43%	15.00%
2%	59.85%	56.41%	56.36%	60.56%
0%	74.78%	70.48%	70.27%	72.32%

SOUTHERN PACIFIC COMPANY
(Pacific Lines)

COLLISIONS, DERAILMENTS, LOCOMOTIVE BOILER ACCIDENTS, OTHER LOCOMOTIVE ACCIDENTS, AND MISCELLANEOUS TRAIN ACCIDENTS AND CASUALTIES TO ALL PERSONS EXCEPT THESPASGERS SUSTAINED THEREIN,
ROAD FREIGHT TRAIN OPERATION, INCLUDING MIXED
REPORTED TO THE INTERSTATE COMMERCE COMMISSION
YEARS 1923 TO 1939, INCLUSIVE

STATE OF ARIZONA

[illegible]

CASUALTIES TO PERSONS EXCEPT THE CREW

	1923-1939	43,797	39,327	2,127,554	84	3	1	63	1.55	1.72	3.20	21.4	109	25	16	170	3
(22)	AVERAGE RATE YEARS 1935 - 1939 COMPARED WITH YEARS 1929 - 1934								85.54%	88.61%	86.83%						21
(23)	AVERAGE RATE YEARS 1935 - 1939 COMPARED WITH YEARS 1923 - 1928								30.94%	30.36%	34.16%						30

NOTE: Figures in columns (ix) to (ccc) exclude trespassers and represents casualties to Road Freight Conductors and Brakemen on duty, with the following exceptions:

Year 1923 includes one fireman, operator repairer, and one express messenger injured.

Year 1927 included 205 passengers.

Year 1931 includes one engineer and one person injured.

25	16	170	21.3%	23.13%	21.84%						
			30.98%	30.14%	34.07%						

Defendant's Exhibit No. 392 (Witness J.J. Sullivan)

Apr. 29, 1941

SOUTHERN PACIFIC COMPANY
(Pacific Lines)

ALL-TRAIN ACCIDENTS
(COLLISIONS, DERAILMENTS, LOCOMOTIVE BOILER ACCIDENTS, OTHER LOCOMOTIVE ACCIDENTS, AND MISCELLANEOUS TRAIN ACCIDENTS AND CASUALTIES TO ALL PERSONS EXCEPT TRESPASSERS SUSTAINED THEREIN,
ROAD FREIGHT TRAIN OPERATION, INCLUDING MIXED
REPORTED TO THE INTERSTATE COMMERCE COMMISSION
YEARS 1923 TO 1939, INCLUSIVE

STATE OF NEVADA

	YEAR (a)	TOTAL FREIGHT TRAIN LOCO. MILES (THOU- SANDS) (b)	TOTAL FREIGHT TRAIN MILES (THOU- SANDS) (c)	TOTAL FREIGHT TRAIN CAR MILES (THOU- SANDS) (d)	COLLISIONS								DERAILMENTS						
					NUMBER CHARGEABLE TO				TOTAL NUMBER OF COLLISIONS (i)	NUMBER OF COLLISIONS PER			NUMBER CHARGEABLE TO				TOTAL NUMBER OF DERAIL- MENTS (q)	NUMBER	
					NEGLI- GENCE OF EMPLOYEES (e)	DEFECTS IN OR FAILURES OF EQUIPMENT (f)	DEFECTS OR IMPROPER MAINTENANCE OF WAY & STRUCTURES (g)	MISCEL- LANEOUS (h)		MILLION FREIGHT LOCO. MILES (j)	MILLION FREIGHT TRAIN MILES (k)	100 MILLION FREIGHT TRAIN CAR MILES (l)	NEGLI- GENCE OF EMPLOYEES (m)	DEFECTS IN OR FAILURES OF EQUIPMENT (n)	DEFECTS OR IMPROPER MAINTENANCE OF JAY AND STRUCTURES (o)	MISCEL- LANEOUS (p)		MILLION FREIGHT LOCO. MILES (r)	MIL- LION FREIGHT TRAIN MILES (s)
(1)	1923	2,411	2,259	111,847	7	-	-	-	7	2.90	3.10	6.26	3	8	3	2	16	6.64	7
(2)	1924	2,193	2,035	106,707	5	-	-	-	5	2.28	2.46	4.59	4	4	-	-	8	3.65	3
(3)	1925	2,438	2,262	127,118	2	-	-	-	2	.82	.88	1.57	1	11	-	1	13	5.33	5
(4)	1926	2,247	2,077	129,622	2	-	-	-	2	.89	.96	1.54	1	1	-	-	2	.89	-
(5)	1927	2,337	2,146	139,959	4	-	-	-	4	1.71	1.86	2.96	-	8	1	-	9	3.86	4
(6)	1928	2,344	2,418	156,869	1	-	-	-	1	.38	.41	.64	2	6	-	-	8	3.03	3
(7)	TOTAL 6 YEARS 1923-1928	14,270	13,197	772,122	21	-	-	-	21	1.47	1.59	2.72	11	38	4	3	56	3.92	4
(8)	1929	2,537	2,320	150,671	1	-	-	-	1	.39	.43	.66	2	2	2	-	6	2.36	2
(9)	1930	2,250	2,057	147,802	1	-	-	-	1	.44	.48	.68	-	5	-	3	8	3.54	3
(10)	1931	1,861	1,688	123,433	1	-	-	-	1	.54	.59	.81	-	3	-	1	4	2.15	2
(11)	1932	1,655	1,514	111,034	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(12)	1933	1,478	1,364	104,663	1	-	-	-	1	.60	.73	.96	1	2	1	1	2	1.21	1
(13)	1934	1,632	1,512	122,026	2	-	-	-	2	1.23	1.32	1.64	-	3	-	2	5	3.38	3
(14)	TOTAL 6 YEARS 1929-1934	11,422	10,455	759,619	6	-	-	-	6	.53	.57	.79	3	15	3	8	29	2.54	2
(15)	1935	1,713	1,596	123,508	-	-	-	-	-	-	-	-	2	-	1	-	3	1.75	1
(16)	1936	2,072	1,929	144,689	3	1	-	-	4	1.93	2.07	2.76	1	5	-	1	7	3.38	3
(17)	1937	2,153	2,007	151,385	1	-	-	-	1	.46	.50	.66	1	7	-	-	8	3.72	3
(18)	1938	1,752	1,647	131,331	-	-	-	-	-	-	-	-	-	3	-	1	4	2.28	2
(19)	1939	1,926	1,814	144,106	-	-	-	-	-	-	-	-	1	1	-	1	3	1.56	1
(20)	TOTAL 5 YEARS 1935-1939	9,616	8,993	695,019	4	1	-	-	5	.52	.56	.72	5	16	1	3	25	2.60	2
(21)	TOTAL 17 YRS. 1923-1939	35,308	32,645	2,226,760	31	1	-	-	32	.91	.98	1.44	19	69	8	14	110	3.12	3
(22)	AVERAGE RATE YEARS 1935 - 1939 COMPARED WITH YEARS 1929 - 1934									DECREASE			1.89%	1.75%	8.86%				
(23)	AVERAGE RATE YEARS 1935 - 1939 COMPARED WITH YEARS 1923 - 1928									DECREASE			64.63%	64.78%	73.53%			33.67%	34.4

(S J.J. Sullivan)

ACCIDENTS, AND MISCELLANEOUS TRAIN ACCIDENTS),
SUSTAINED THEREIN,
MIXED
MISSION

DERAILMENTS						LOCOMOTIVE BOILER ACCIDENTS						
FACTS PROPER TENANCE AND STURES (o)	MISCEL- LANEOUS (p)	TOTAL NUMBER OF DERAIL- MENTS (q)	NUMBER OF DERAILMENTS PER			NUMBER CHARGEABLE TO			TOTAL NUMBER OF LOCOMOTIVE BOILER ACCIDENTS (z)	NUMBER OF LOCOMOTIVE BOILER ACCIDENTS PER		
			MILLION FREIGHT LOCO. MILES (r)	MILLION FREIGHT TRAIN MILES (s)	100 MILLION FREIGHT TRAIN CAR MILES (t)	NEGLI- GENCE OF EMPLOYEES (u)	DEFECTS IN OR FAILURES OF EQUIPMENT (v)	MISCEL- LANEOUS (w)		MILLION FREIGHT LOCO. MILES (y)	MILLION FREIGHT TRAIN MILES (s)	100 MILLION FREIGHT TRAIN CAR MILES (aa)
3	2	16	6.64	7.08	14.31	-	-	-	-	-	-	-
-	-	8	3.65	3.93	7.50	-	-	-	-	-	-	-
-	1	13	5.33	5.75	10.23	-	-	-	-	-	-	-
-	-	2	.89	.96	1.54	-	-	-	-	-	-	-
1	-	9	3.85	4.19	6.43	-	-	-	-	-	-	-
-	-	8	3.03	3.31	5.10	-	-	-	-	-	-	-
4	3	56	3.92	4.24	7.25	-	-	-	-	-	-	-
2	-	6	2.36	2.59	3.98	-	-	-	-	-	-	-
-	3	8	3.54	3.89	6.41	-	-	-	-	-	-	-
-	1	4	2.15	2.37	3.24	-	-	-	-	-	-	-
1	1	2	1.21	1.32	1.80	-	-	-	-	-	-	-
-	2	5	3.38	3.67	4.78	-	-	-	-	-	-	-
-	1	4	2.45	2.65	3.28	-	-	-	-	-	-	-
3	8	29	2.54	2.77	3.82	-	-	-	-	-	-	-
1	-	3	1.75	1.88	2.43	-	-	-	-	-	-	-
-	1	7	3.38	3.63	4.84	-	-	-	-	-	-	-
-	-	8	3.72	3.99	5.28	-	-	-	-	-	-	-
-	1	4	2.28	2.43	3.05	-	-	-	-	-	-	-
-	1	3	1.56	1.65	2.08	-	-	-	-	-	-	-
1	3	25	2.60	2.78	3.60	-	-	-	-	-	-	-
8	14	110	3.12	3.37	4.94	-	-	-	-	-	-	-
			-	-	5.76%							
			2.36%	.36%	-							
			33.67%	34.43%	50.34%							

CONSIST TRAIN NO. 3
DEPARTING TUCSON, APRIL 12, 1940
CONDUCTOR G. SHAW, ENGINEER B. CHEN

C. S. 1213

105/0

INITIAL	NUMBER	ENGINEER	FROM	TO	MILES
JO	4390	W. V. ...	1627	1429	178
1	4390	E. V. ...	1230	1230	100
-	4312	F. ...	1296	1167	217
-	4312	F. ...	1187	982	124
-	4356	B. C. ...	284	733	294
HELPER					
SP	4334	E. ...	900	733	174
-	4352	S. ...	733	483	251

INITIAL	CLASS	NUMBER	FROM	TO	MILES
SP	mail	5138	1627	1296	332
1	Bag	6185	1	483	1143
1	1	6461	1	1	-
1	4N	2325	1	1	-
SP	Team	4167	1	1	-
SP	Team	10003	1	1	-

C. B. 1313

[illegible]

all cars belonging to regular train. Loaded Cars, Special Cars, Cars loaded with fruit, Horse Cars and other cars not a part of regular train, with full information, to Auditor Equip. Service Accts. immediately after completing run. This report by conductors on thorough walk. It shall show party or organization for whose account operated.

3.000

Ar 12 ora
1087

CONSIST TRAIN NO. 44
DEPARTING YUMA, APRIL 13, 1940
CONDUCTOR C. H. DAVIS; ENGINEER B. CHICK

Witness J. S. Sims

Club

2. ...

~~Account~~

APR 30 1947

C. S. 1213

PASSENGER CONDUCTOR'S CAR REPORT

Train 44 Conductor Goetz 1934

Lv. La 18 PM 4-12

Д. Умме 235 ан. 4-13

Train: 44 Conductor: *C. J. Davis*

3.509 4-12

APR 10 1948

Train #4 Conductor J. J. MORRISSEY

1- TUBSON 1198-1113

4- EL PASS 12-4M 4-10
3-10 8-11-13

[illegible]

Conductor W. N. FUGER

130 PM H-13

Лит. Воскресенский 37-й 4-14

INITIAL	NUMBER	ENGINEER	DOB	BO	MILES
AP	4311	2100 Stephens	483	733	151
-	-	2100 Stephens	733	984	247
AP	4321	2100 Stephens	984	147	123
AP	4322	2100 Stephens	1110	701	217
AP	4355	2100 Stephens	1246	1439	153
AP	4355	2100 Stephens	1839	1627	188

INITIAL	CLASS	NUMBER	FROM	TO	MILES
W. J. J.	—	4270	983	984	545
—	—	4172	✓	1627	1144
—	—	4183	✓	—	—
SP. Z	—	2944	✓	—	—
W. J. J.	—	4241	✓	—	—
—	—	3069	✓	—	—
SP. S	—	10134	✓	1439	956
RL	—	3116	✓	1627	1144
—	—	206	✓	—	—
—	—	207	✓	—	—

CONDUCTOR'S REPORT OF SPECIAL CARS

[illegible]

face of report all cars belonging to regular train.
' Cars, Dead Head Cars, Special Cars, Cars loaded with fruit, Horse Cars and other cars not a part of regular train, with full information.
and forwarded to Auditor Equip't, Service Accts. immediately after completing run.
regarding use of this report by conductors on through trains.
of special trains shall show party or organization for whose account operated.

Arr. Yuma 235 AM 4-13
 Train 44 Conductor Chet Davis
 Lv. Yuma 350 AM 4-13
 Arr. Tucson 1040 AM 4-13
 Train 44 Conductor J. J. MORRISSEY
 Lv. TUCSON 1109 AM 4-13
 Arr. EL PASO 240 PM 4-12
 Train 44 Conductor W. W. PROGRESS
 Lv. EL PASO 730 PM 4-13
 Arr. Albuquerque 32 PM 4-14

INITIAL	NUMBER	ENGINEER	FROM	TO	MILES
AP	4311	2100 Perkins	483	733	251
-	-	2100 Perkins	733	984	251
AP	4324	2100 Perkins	984	1123	139
AP	4324	2100 Perkins	1123	1271	148
AP	4325	2100 Perkins	1271	1434	163
AP	4325	2100 Perkins	1434	1627	193

INITIAL	CLASS	NUMBER	FROM	TO	MILES
AP	2	4270	483	984	501
-	-	4172	-	1627	1144
-	-	4183	-	-	-
AP	2	2944	-	-	-
AP	2	4241	-	-	-
-	-	3069	-	-	-
AP	2	10134	-	1434	420
AP	2	3116	-	1627	1144
-	-	206	-	-	-
-	-	207	-	-	-
AP	2	6479	-	-	-
-	-	6403	-	906	425
-	-	2215	783	-	273
-	-	1552	906	1123	217
AP	2	6044	1123	1627	504

CONDUCTOR'S REPORT OF SPECIAL CARS

INITIAL	NAME OR NUMBER	FROM	TO	DESTINATION	CONTENTS	STERILIZED WEIGHT OF FREIGHT CARS	WEIGHT OF CONTENTS OF FREIGHT CARS	Kind of Transportation No. First When Issued No. W. B. From What Station
PCO	7303	906	8146	El Paso	274			
-	2142	-	-	-	-			
AP	1221	-	984	Tucson	-			
AP	6054	1123	1146	El Paso	-			

Conductors will show on face of report all cars belonging to regular train.
 Report above all Officers' Cars, Dead Head Cars, Special Cars, Cars loaded with fruit, Horse Cars and other cars not a part of regular train, with full information.
 Report must be made out and forwarded to Auditor Equival. Service Accs. immediately after completing run.
 See special instructions regarding use of this report by conductors on through trains.
 Report covering movement of special trains shall show party or organization for whose account operated.

NUMBER OF CARS	
IN	OUT
Los Angeles	12
Yuma	12
Phoenix	13
Tucson	15
El Paso	14

Defendant's Exhibit No. 395 (Witness B.S. Sines)
Apr. 30, 1941

SOUTHERN PACIFIC COMPANY
(Pacific Lines)

1940 SERVICE RECORDS OF
CONDUCTORS A. T. ASH,
L. A. FAIL AND E. V. SHAW

	YEAR 1940 MONTH (a)	A. T. ASH		L. A. FAIL		E. V. SHAW	
		TRIPS OR DAYS (b)	MILES OR EQUIVALENT MILES (c)	TRIPS OR DAYS (d)	MILES OR EQUIVALENT MILES (e)	TRIPS OR DAYS (f)	MILES OR EQUIVALENT MILES (g)
(1)	January	18	5,676	29	4,702	19	3,173
(2)	February	4	937	27	4,615	19	3,352
(3)	March	11	2,474	28	4,740	22	3,767
(4)	April	24	4,445	27	4,517	20	3,335
(5)	May	23	3,898	20	3,456	21	3,574
(6)	June	18	3,316	29	4,938	19	3,220
(7)	July	21	4,010	25	4,365	10	1,682
(8)	August	23	4,698	21	3,505	20	3,519
(9)	September	17	3,321	24	4,403	16	2,738
(10)	October	25	4,343	28	4,766	34	4,380
(11)	November	21	3,528	26	4,367	19	3,889
(12)	December	26	4,558	26	4,639	28	3,530
(13)	TOTAL	231	45,204	310	53,013	257	40,159

Defendant's Exhibit No. 396 (Witness B.S. Sines)
Apr. 30, 1941

Page 1 of 6 pages

American Railway Association

Specifi-
cations for
Freight
Brakes.

AMERICAN RAILWAY ASSOCIATION
MECHANICAL DIVISION
Master Car Builders Master Mechanics

SPECIFICATIONS FOR FREIGHT BRAKES

Standard

ADOPTED, 1933

Supersedes Test Requirements for Triple Valves for Freight Service adopted 1895, last revised 1911.

Purpose

The purpose of this specification is to define and prescribe requirements for power brakes and appliances for operating power brake systems.

Definitions

For purposes of this specification, terms used herein are defined as follows:

Power Brake.—A combination of parts operated by compressed air and controlled manually, pneumatically or electrically, by means of which the motion of a car or locomotive is retarded or arrested.

Power Brake System.—The power brakes on locomotives and cars of a train so interconnected that they can be operated together and by means of which the motion of the train is retarded or arrested.

Brake Valve.—The valve of the locomotive equipment by means of which operation of the power brake system is controlled.

Equalizing Reservoir.—The small reservoir connected to the brake

Operating Valve.—Device on each car, the operation of which results in:

- (a) Admission of air to brake cylinder,
- (b) Release of air from brake cylinder, and
- (c) Charging of one or more reservoirs.

Service Reduction.—A decrease in brake pipe pressure, usually of from 5 to 25 pounds, at a rate sufficiently rapid to move the operating valve to service position, but at a rate not rapid enough to operate the valve to emergency position.

Service Application.—A brake application which results from one or more service reductions.

Full Service Reduction.—A service reduction sufficient in amount to cause equalization of pressure in brake cylinder with pressure in the reservoir from which compressed air is supplied to brake cylinder.

Full Service Application.—A brake application which results from one or more brake pipe reductions sufficient in amount to cause a full service reduction.

Emergency Reduction.—A depletion of brake pipe pressure at a rate sufficiently rapid to move the operating valve to emergency position.

Emergency Application.—A brake application which results from an emergency reduction.

Emergency Brake Cylinder Pressure.—The force per square inch exerted upon piston in brake cylinder by compressed air which is admitted to brake cylinder as a result of an emergency reduction. Effective emergency brake cylinder pressure is a pressure not less than 15 per cent nor more than 20 per cent greater than the brake cylinder pressure obtained from a full service reduction on the same car and from the same initial pressures.

Test Requirements

Car brake equipment for freight service shall conform to the following requirements when tested on the test rack shown on drawing, Plate No. — representing the power brake equipment of a 150-car train. Tests will be made from an initial brake pipe pressure of 70 lbs. at the brake valve and main reservoir pressure of 100 lbs. The brake system leakage will be limited to that which will cause the pressure in the 150th car to be within one pound of the pressure on car 1. Unless otherwise specified, brake cylinder piston travel will be 8 in. and brake cylinder leakage not to exceed 2 lbs. per minute from 50 lbs. pressure.

American Railway Association.

**Specifi-
cations for
Freight
Brakes.**

Charging: Individual Car Test

TR-1. With operating valve in retarded recharge position and with 90 lbs. brake pipe pressure maintained, the auxiliary reservoir should be charged from 0 to 70 lbs. pressure in not more than 340 seconds and not less than 260 seconds, and the emergency reservoir from 0 to 70 lbs. in not more than 340 seconds and not less than 260 seconds.

TR-2. With operating valve blocked in normal charging position and with 90 lbs. brake pipe pressure maintained, the auxiliary reservoir should be charged from 0 to 70 lbs. pressure in not more than 195 seconds and not less than 130 seconds, and the emergency reservoir from 0 to 70 lbs. in not more than 255 seconds and not less than 170 seconds.

Service Application

TR-3. With a service reduction of 5 lbs. in the equalizing reservoir at the brake valve all brakes must apply.

TR-4. An initial 5 lb. equalizing reservoir reduction at the brake valve shall produce substantially 10 lb. brake cylinder pressure throughout the train, including brakes having piston travel in excess of 8 inches.

TR-5. With an equalizing reservoir reduction of 10 lbs., the difference in the time of obtaining substantially 10 lbs. pressure in the brake cylinder of the 1st and 150th brakes shall be nominally 20 seconds or less.

TR-6. A brake pipe reduction of 10 lbs. must result in pressure in each brake cylinder of not less than 15 lbs. nor more than 25 lbs.

TR-7. Quick service activity of the train brakes must cease when the initial quick service action has been completed.

TR-8. A total brake pipe reduction of 25 lbs. must result in equalization of brake cylinder pressure with pressure in the reservoir from which compressed air is supplied to the brake cylinder, and brake cylinder pressure of not less than 48 lbs. nor more than 52 lbs. must be obtained.

Emergency Application

TR-9. When the operating valve acts in emergency it shall so function as to develop nominally 15 lbs. brake cylinder pressure in not more than 1 1/2 seconds and the maximum pressure in nominally 10 seconds.

TR-10. The operating valve shall so function that, when an emergency application is made subsequent to a service application which has

Specifications for
Freight
Brakes.

American Railway Association

produced not less than 30 lbs. brake cylinder pressure, the maximum brake cylinder pressure shall be attained in nominally 4 seconds from the beginning of emergency action of the valve.

TR-11. With an emergency reduction of brake pipe pressure all brakes, including the 150th, shall start to apply within 8.2 seconds and develop not less than 15 per cent or more than 20 per cent in excess of 50 lbs. brake cylinder pressure within 18.2 seconds from the movement of the brake valve to emergency position.

TR-12. Emergency application shall produce from a charged system between 15 and 20 per cent increase in brake cylinder pressure over that which results from a full service application and irrespective of any degree of prior service application.

TR-13. With brakes Nos. 1, 2 and 3, or any group of three consecutive brakes cut out, an emergency reduction made with the brake valve should cause the remainder of the brakes to operate in emergency and produce normal emergency pressures in the same time as when the brakes are all cut in.

TR-14. Using the piping of the locomotive tender and car 1 of the train rack, with the double heading cock under the brake valve closed and the tender vent valve cut out, the operating valve must give a quick action application when brake pipe pressure is reduced by direct discharge to the atmosphere through a disc—with a $\frac{1}{4}$ in. orifice and must not with a $\frac{1}{2}$ in. orifice.

Release Operation

TR-15. Both service and emergency brake applications shall be released when the brake pipe pressure is increased to not more than 1½ lbs. above that of the auxiliary reservoir and irrespective of the increased frictional resistance to release movement of the piston and slide valves after a period of operation in train service.

TR-16. With 15 lbs. service reduction and brake valve exhaust closed, all valves, including the 150th shall move to release within 40 seconds after the brake valve is placed in release position unless it is

brake cylinder pressure shall be attained in nominally 4 seconds from the beginning of emergency action of the valve.

TR-11. With an emergency reduction of brake pipe pressure all brakes, including the 150th, shall start to apply within 8.2 seconds and develop not less than 15 per cent or more than 20 per cent in excess of 50 lbs. brake cylinder pressure within 18.2 seconds from the movement of the brake valve to emergency position.

TR-12. Emergency application shall produce from a charged system between 15 and 20 per cent increase in brake cylinder pressure over that which results from a full service application and irrespective of any degree of prior service application.

TR-13. With brakes Nos. 1, 2 and 3, or any group of three consecutive brakes cut out, an emergency reduction made with the brake valve should cause the remainder of the brakes to operate in emergency and produce normal emergency pressures in the same time as when the brakes are all cut in.

TR-14. Using the piping of the locomotive tender and car 1 of the train rack, with the double heading cock under the brake valve closed and the tender vent valve cut out, the operating valve must give a quick action application when brake pipe pressure is reduced by direct discharge to the atmosphere through a disc—with a $\frac{1}{8}$ in. orifice and must not with a $\frac{3}{32}$ in. orifice.

Release Operation

TR-15. Both service and emergency brake applications shall be released when the brake pipe pressure is increased to not more than $1\frac{1}{4}$ lbs. above that of the auxiliary reservoir and irrespective of the increased frictional resistance to release movement of the piston and slide valves after a period of operation in train service.

TR-16. With 15 lbs. service reduction and brake valve exhaust closed, all valves, including the 150th shall move to release within 40 seconds after the brake valve is placed in release position where it will remain 15 seconds and then be placed in running position.

TR-17. With 15 lbs. service reduction and brake valve exhaust closed, the brake pipe pressure shall be increased 5 lbs. at car 150 within $1\frac{1}{2}$ minutes after the brake valve is placed in release position where it will remain 15 seconds, then placed in running position.

TR-18. The rate of release of pressure from the brake cylinders will be nominally 23 seconds from 50 to 5 lbs.

TR-19. The release valve capacity shall be sufficient to reduce the pressure of both the auxiliary and emergency reservoirs from 70 lbs. to 5 lbs. within 7 seconds.

General Requirements

The following requirements for power brakes and appliances for operating power brake systems for freight trains are specified and prescribed:

Service Application

GR-1. The quick service feature of the brake must produce a substantially uniform time of quick service transmission regardless of the unavoidable variations in frictional resistance of the parts.

GR-2. The brake shall so function as to prevent a degree of wave action in brake pipe pressure sufficient to cause undesired release of any brakes while the brakes are being applied.

GR-3. The degree of stability shall be sufficient to prevent undesired service applications occurring with unavoidable minor fluctuations of brake pipe pressure.

GR-4. The quick service action shall be such as to improve the quick service functioning of the "K" triple valves associated with them.

GR-5. The brake cylinder pressure increase resulting from quick service operation shall be less when the brake is reapplied with pressure retained in the brake cylinder than with applications made when the brake cylinder pressure is zero.

Emergency Application

GR-6. Undesired quick action shall not result with any rate of change in brake pipe pressure which may occur during service application or release of the brakes.

GR-7. Emergency application operation shall always be available irrespective of the existing state or stage of brake application or release.

GR-8. Emergency applications initiated during a release of a previous brake application shall produce a material increase in brake cylinder pressure over that which would result from a full service application made under the same conditions.

Release of Service Applications

GR-9. The brake shall so function as to provide a more rapid rise in brake pipe pressure in the rear portion of the train during release of train brakes than obtains with the "K" equipment.

GR-10. In the normal release of train brakes, individual car brakes shall not start recharging from the brake pipe until its pressure has increased sufficiently to have accomplished the release of adjacent valves.

GR-11. The recharge of auxiliary reservoirs in the forward portion of the train shall be automatically retarded while full release position of the brake valve is being used to initiate the release of train brakes.

Release of Emergency Applications

GR-12. The brake shall so function as to accomplish the release of an emergency application with the same degree of certainty secured in the release of service applications.

GR-13. When releasing brakes following an emergency application, each brake shall so function as to decrease the auxiliary reservoir pressure prior to the actual release.

GR-14. The brake shall function as specified in GR-13 when mixed in trains with present standard "K" equipment.

GR-15. That apparatus conforming to the foregoing requirements shall be so constructed, installed and maintained as to be safe and suitable for service.

General Features Relating to Installation and Maintenance

GR-16. The portions of the car brake which control the brake application and release, and also the brake cylinder, shall be so protected against the entrance of dirt, water and floating dust that the time interval between cleaning and repairs may be extended as compared with standard "K" equipment.

GR-17. Reinforced flanged fittings will be used on the brake pipe tee and for all pipes connecting the operating valve with the brake pipe, brake cylinder and reservoirs.

GR-18. The brake branch pipe tee shall be provided with a lug for rigidly anchoring it to the car underframe to prevent shifting of the brake pipe and avoid strains on the branch pipe.

GR-19. The design of the service and emergency valves shall be such as to permit their removal for cleaning and repair without disturbing pipe joints.

GR-20. The release valve shall permit the release of air from the auxiliary reservoir only or from both the auxiliary and emergency reservoirs by extended movement of the same handle.

GR-21. The operating valve shall be so constructed that by inexpensive adjustment the rate of brake cylinder pressure development may be changed to meet such change in train operating conditions as may develop in the future.

Defendant's Exhibit No. 357 (Witness B.B. Sines)
Apr. 30, 1941

SOUTHERN PACIFIC COMPANY
(Pacific Lines)

DELAYS TO FREIGHT AND PASSENGER TRAINS
ASSOCIATED WITH EQUIPMENT OR DEFECTS THEREIN,
AS REPORTED BY CONDUCTORS ON TIME RETURNS AND
DELAY REPORTS, JANUARY 1 - JUNE 30, 1940 (#)
LORDSBURG, NEW MEXICO TO EL PASO, TEXAS

	FREIGHT TRAINS		PASSENGER TRAINS	
	70 CARS AND LESS	OVER 70 CARS	14 CARS AND LESS	OVER 14 CARS
	(a)	(b)	(c)	(d)
1- Trespasser stepping on cutting lever	9	3	-	-
2- Undesired emergency	1	1	-	-
3- Hot boxes	17	6	1	-
4- Truck frame broken, bent, twisted (out of line)	-	1	-	-
5- Broken wheels	1	-	-	-
6- Hose failures	6	2	-	-
7- Sticking brakes	3	4	-	-
8- Broken branch pipes	2	1	-	-
9- Hot wheels	4	-	-	-
10- Angle cocks broken or otherwise defective	1	-	-	-
11- Train line broken or otherwise defective	5	-	-	-
12- Some one set air on train	-	-	1	-
13- Whistle signal sounded	-	-	1	-
14- Brake beam down	5	2	-	-
15- Brake rigging coming down - other failure, etc.	5	1	-	-
16- Wire up brake beam	2	-	-	-
17- Repair brake rigging	4	2	-	-
18- Hand brake set	1	-	-	-
19- Couplers, knuckles	5	1	-	-
20- Drawbar, draft gear, carrier iron	4	1	-	-
21- Switch bad order to rear	1	2	-	-
22- Break-in-two	3	2	-	-
23- Train parted and uncoupled	2	1	-	-
24- Brass car	7	5	-	-

CARS AND LESS (a)	OVER 70 CARS (b)	CARS AND LESS (c)	OVER 14 CARS (d)
9	3	-	-
1	1	-	-
17	6	1	-
-	1	-	-
1	-	-	-
6	2	-	-
3	4	-	-
2	1	-	-
4	-	-	-
1	-	-	-
5	-	-	-
-	-	1	-
-	-	1	-
5	2	-	-
5	1	-	-
2	-	-	-
4	2	-	-
1	-	-	-
5	1	-	-
4	1	-	-
1	2	-	-
3	2	-	-
2	1	-	-
7	5	-	-
88	35	3	None

- 1- Trespasser stepping on cutting lever
- 2- Undesired emergency
- 3- Hot boxes
- 4- Truck frame broken, bent, twisted (out of line)
- 5- Broken wheels
- 6- Hose failures
- 7- Sticking brakes
- 8- Broken branch pipes
- 9- Hot wheels
- 10- Angle cocks broken or otherwise defective
- 11- Train line broken or otherwise defective
- 12- Some one set air on train
- 13- Whistle signal sounded
- 14- Brake beam down
- 15- Brake rigging coming down - other failure, etc.
- 16- Wire up brake beam
- 17- Repair brake rigging
- 18- Hand brake set
- 19- Couplers, knuckles
- 20- Drawbar, draft gear, carrier iron
- 21- Switch bad order to rear
- 22- Break-in-two
- 23- Train parted and uncoupled
- 24- Brass car
- 25- T O T A L S

FREIGHT TRAINS		PASSENGER TRAINS	
70 CARS AND LESS (e)	OVER 70 CARS (f)	14 CARS AND LESS (g)	OVER 14 CARS (h)
1,900	652	741	18
282,172	96,766	109,326	2,629
17,851,722	9,100,005	1,270,376	42,443
202,860	260,000	423,459	-
63.3	94.0	11.6	16.1

- 26- Trains
- 27- Train miles
- 28- Car miles
- 29- Car miles per delay
- 30- Cars per train

(/) Does not include delays reported due to failure of locomotive parts or machinery.

[fol. 6070]

[File endorsement omitted]

IN THE SUPERIOR COURT OF THE STATE OF ARIZONA IN AND
FOR THE COUNTY OF PIMA

No. 20087

STATE OF ARIZONA, EX REL JOE CONWAY, Attorney General
of the State of Arizona, Plaintiff,

vs.

SOUTHERN PACIFIC COMPANY, a corporation, Defendant

Court's Finding of Fact and Conclusions of Law—Filed
February 11, 1942

Submitted in Accordance with the Provisions of Section 21-
1027 Arizona Code Annotated, 1939

[fol. 6071]

INDEX

	Page
Findings of Fact and Conclusions of Law	3879
Preamble	3887
Special findings of fact	3888
I. Definition of terms	3888
II. Nature of the case: the parties involved	3889
(a) The parties	3889
(b) The issues	3889
III. Description of defendant's lines of rail- road	3890
(a) General description of the system	3890
(b) The lines in the affected territory	3891
(1) Location; principal stations; double track	3891
(2) Ruling grades and curvatures	3893
(3) Helper districts	3895
(4) The affected lines well con- structed	3896
(c) Defendant's lines in Nevada and Utah; description: comparison with Arizona lines	3896

	Page
IV. Character of freight and passenger traffic handled upon defendant's lines in Arizona and adjacent territory; comparison with Nevada traffic	3897
(a) Predominant interstate character of Arizona freight and passenger traffic	3897
(b) Character of commodities transported: need for expedition	3898
(c) Arizona traffic compared with traffic across Nevada	3900
V. The Train-Limit Law: history and text	3901
VI. Recent improvements in defendant's transportation plant, both generally, and in the territory affected by the law	3902
(a) Improvements in track, roadbed, bridges and other fixed structures	3902
(b) Improvements in locomotives, cars and equipment	3904
(c) Purpose of the improvements made by defendant: adequacy of defendant's present track, structures, and equipment to permit operation of long trains	3907
VII. Defendant's methods of operation, past and present	3909
(a) Operating subdivisions: runs of crews and locomotives: operating rules: inspections	3909
(1) Operating divisions and subdivisions	3909
(2) Runs of crews and locomotives	3911
(3) Operating rules	3912
(4) Inspections	3913
(5) Similarity of operating methods, rules, records, etc., on defendant's lines in Nevada and Utah to those in the affected territory	3914

[fol. 6072]

INDEX

iii

	Page
(b) Lengths of defendant's trains	3915
(1) Train lengths on the system generally	3915
(2) Train lengths in Arizona, past and present: comparison with other portions of the system, and with the system as a whole	3917
(c) Reductions in schedules of freight trains	3920
(d) Effect of the long-train program upon the efficiency and economy of defendant's train operations	3924
(1) As to the system generally	3924
(2) In the Nevada-Utah territory	3927
(3) Defendant's inability to achieve comparable efficiency and economy in the territory affected by the Arizona Train-Limit Law	3929
VIII. Comparison of defendant's methods of operation with those followed on United States railroads generally	3934
(a) Improvements in road and equipment	3934
(b) Increased train lengths	3937
(c) Improved schedules and performance	3939
(d) Increased efficiency and economy	3940
(e) Results of the long-train program from the standpoint of the public, the employes, and the railroad owners	3943
(1) Reduction in average transportation charges paid by the public	3943
(2) Increases in average wages paid to employes	3943
(3) Effect on returns to owners of the railroads	3944

	Page
(f) Similarity of operating conditions and operating rules on other railroads to those prevailing upon defendant's lines in the affected territory	39
IX. Recent long-train operations of defendant in Arizona: intention to undertake future long-train operations	39
(a) Long-train operations of defendant in Arizona in 1940	39
(b) Future long-train operations contemplated by defendant: changes in plant and equipment	39
X. Effect of the Train-Limit Law upon defendant's operations	395
(a) The redispatching studies	395
(b) Interference with and delays to interstate traffic	395
(1) Terminal delays	395
(2) Delays to trains en route: Meets and passes	395
(3) Delays to and interferences with passenger trains and traffic	395
(4) Summary of effect of delays and interferences	396
(c) Reduction in train lengths: increase in number of trains operated	396
(1) Freight train operations	396
(2) Passenger train operation	396
(d) Increased annual expense of operation, etc., imposed by the law	396
XI. Slack and slack-action in trains: nature, cause and effects	396
(a) Description of draft rigging	396
(b) Action of draft gears	397
(c) Slack and slack-action defined	397
(d) Factors affecting slack-action: Amount developed in operation	397
(e) Slack-action in passenger-train operation	2974

[fol. 6074]

XII. Safety of operation as affected by train lengths: Accident and casualty statistics	3974
(a) Accident reports to Interstate Commerce Commission	3974
(b) Bases for computing accident and casualty rates	3976
(c) National accident and casualty statistics	3976
(1) All employees	3977
(2) Road trainmen and enginemen on duty, all classes	3977
(3) Road freight trainmen and enginemen on duty	3978
(4) Road freight conductors, brakemen and flagmen	3978
(5) Conductors, brakemen and flagmen—slack-action	3979
(6) Passengers on trains	3980
(d) Train accidents—national	3980
(e) Commission's investigation of train accidents—national	3982
(1) Freight train accidents	3982
(2) Passenger train accidents	3983
(f) Accident statistics—defendant's Pacific Lines	3983
(1) Employees on duty—all classes of service—train and train service accidents	3984
(2) Trainmen on duty—all classes of service	3984
(g) Nevada and Arizona casualty statistics	3985
(1) Propriety and significance of comparison of Nevada-Arizona casualty statistics on defendant's lines	3985
(2) All classes of employees—all classes of service	3986

	Page
(3) All classes of employes—road freight trains	398
(4) Road freight conductors, brakemen and flagmen	398
(5) Slack-action casualties to trainmen, Nevada-Arizona	399
(6) Caretakers in cabooses—Nevada-Arizona	399
(7) Serious casualties—Nevada-Arizona	399
(8) Casualties classified—Nevada-Arizona	399
(9) Derailments reportable as train accidents—Nevada-Arizona	399
(h) Comparison of short and long-train periods in Nevada with each other	399
(1) Comparison, Nevada with Arizona—three year periods	399
(i) Casualty statistics—defendant's Los Angeles Division	399
(j) Accident and casualty statistics—defendant's lines in New Mexico	400
(1) Casualties to persons—freight-train operation	400
(2) Train accidents—freight-train operation	400
(3) Passenger-train accidents and casualties	400
(k) Santa Fe casualty statistics—comparing short-train and long-train operations	400
(l) Chesapeake and Ohio Railway—casualty statistics	400
(m) Decrease in casualties—Nevada compared with Arizona	400
(n) Casualties while train standing	400
(o) Passenger-train safety	401

[fol. 6075]

	Page
(1) Passenger casualties—Class I railroads of the United States	4010
(2) Passenger casualties—Nevada and Arizona	4010
(p) Grade-crossing accidents	4013
(q) Freight-train derailments — Ne- vada, Arizona, and New Mexico	4015
(r) Emergency applications of air by engineer	4017
(s) Heavier graduating springs	4017
(t) Arizona long-train operations, 1940	4018
(u) Employes affected by the train- limit law	4019
(v) Increase in accident and casualty hazard inherent in increase of train units	4021
XIII. Analysis of certain contentions ad- vanced by plaintiff	4022
(a) The contention that, with long- train operation, trains would be delayed at meeting and passing points because of inadequate sid- ing capacities	4022
(b) The contention that trains should be limited to 70 cars in order that the members of the crews may see and interpret signals more readily	4023
(c) The contention that members of the crews on long trains are in constant fear of injury; and are thereby ren- dered less alert and efficient in the performance of their duties	4025
(d) The contention that long trains cannot be properly inspected or supervised while in operation, but that short trains can be and that long-train operation therefore re- sults in greater hazards	4026
(e) The contention that the present type of air-brake equipment is in-	

	adequate to control the speed of and to stop long trains, but is more efficient and adequate upon short trains	403
XIV.	Extent of penalties imposed by the law	403
XV.	The permissible number of cars in an interstate train is a subject of national and not local concern	403
XVI.	Financial burden imposed by the law a factor in determining its unreason- ableness	403
XVII.	Further arbitrary effect of the law	403
XVIII.	Impairment of defendant's facilities by the law	403
XIX.	Financial burden on interstate com- merce	403
XX.	Substantial allegations sustained	403
Conclusions	of law	403
I.	Jurisdiction	403
II.	The Train-Limit Law invades an ex- clusive Federal field and thus violates the Commerce Clause of the Federal Constitution	403
III.	The law operates with extra-territorial effect	403
IV.	The law interferes with and unduly regulates the interstate commerce both within and without Arizona	403
V.	The law imposes undue and improper burdens upon interstate commerce	403
VI.	The law conflicts with existing Federal legislation	403
[fol. 6077]		
VII.	The law operates unreasonably and arbi- trarily to deprive defendant of its prop- erty, in violation of both the Commerce Clause and the Fourteenth Amendment to the Federal Constitution and also in violation of the Due-Process Clause of the Arizona Constitution	403
VIII.	Defendant entitled to judgment	403

NOTE: The following findings are supported by the evidence referred to in the annotations to each finding, oral testimony being referred to by the name of the witness and page number of the reporter's transcript, and exhibits by reference to their respective numbers.

[fol. 6078] *Findings of Fact and Conclusions of Law*

Preamble

This cause came on regularly for trial on November 19, 1940, before the above-entitled Court; Honorable Levi S. Udall, Judge of the Superior Court of the State of Arizona, to whom the cause had been duly assigned, presiding and sitting without a jury, a trial by jury having been duly waived by the parties.

Thereafter said trial proceeded from day to day with certain intermissions until and including May 1, 1941. In the course of said trial evidence, both oral and documentary, was offered by each of the parties to the cause.

The parties were represented by counsel, Honorable Joe Conway, Attorney General of the State of Arizona, Wesley E. Polley, Esq., Assistant Attorney General, and Charles L. Strouss, Esq., appearing for the plaintiff, and Knapp, Boyle and Thompson, Henley C. Booth, Esq., and Burton Mason, Esq., for the defendant.

At the conclusion of the trial on said May 1, 1941, it was stipulated and agreed in open Court, by and between said parties, that proposed findings of fact and conclusions of law, together with briefs of argument might be filed with the Court by the parties, or by either party, prior to the final submission of the cause to the Court for its decision; and the Court was then and there duly requested to make and enter written special findings of fact and conclusions of law before rendering judgment. Thereafter, and in due course, such proposed special findings of fact and conclusions of law, and said briefs of argument, were duly filed with the Court by the parties.

[fol. 6079] Now, therefore, having duly considered said proposed findings and conclusions and briefs of argument, together with all the evidence, both oral and documentary, of record herein, and all of the other records, papers, files, and proceedings in this cause, and being now fully advised

in the premises, the Court hereby makes, adopts and enters the following as its special findings of fact and conclusions of law herein:

[fol. 6080]

SPECIAL FINDINGS OF FACT

I

Definition of Terms

For the sake of brevity the words "train-limit law", and "the law" (without other separate designation), as used in these findings mean, unless the context otherwise requires, that certain statute of the State of Arizona, enacted in 1912, entitled "An act limiting the number of cars in a train" (being Section 69-119 of the Arizona Annotated Code, 1939), hereinafter set forth at length; which statute prohibits the operation in Arizona of trains of more than 70 freight or other cars, exclusive of caboose, and passenger trains of more than 14 cars.

Trains containing cars in excess of the maxima permitted by said Train-Limit Law are referred to in these findings as "long trains"; and trains coming within the limits fixed by said statute are referred to as "short trains".

The term "interstate trains" means all trains carrying any interstate traffic or commerce, or engaged in interstate transportation.

By the expression "standard long-train operation" is meant the practice of handling freight traffic in freight trains containing substantially more than 70 cars, and passenger traffic in passenger trains of more than 14 cars, whenever the volume, destination, and character of the traffic to go forward by train is such that a long train can be more efficiently and economically operated than a short train; and to handle in short trains such traffic as cannot be conveniently or economically handled in long trains.

By the expression "the affected territory" is meant the districts, including the lines of the defendant within Arizona [fol. 6081] and in the adjacent portions of California, Texas, and New Mexico, wherein the Train-Limit Law affects or may affect the railroad operations of defendant.

The present tense, as used herein, means all times since and including January 1, 1938.

II

Nature of the Case: The Parties Involved

(a) The Parties.

The plaintiff in this action is the State of Arizona. The suit is brought on behalf of the state, by and at the direction of the Attorney General of Arizona, acting in his official capacity.

Defendant is a corporation duly organized and existing under and by virtue of laws of the State of Kentucky, and a citizen and resident of that state. Defendant is engaged in the operation, as a common carrier in interstate commerce, of lines of railroad in the States of Oregon, California, Nevada, Utah, Arizona, Texas, and New Mexico, and in the transportation of passengers and property from, to, and between points in each and all of said states. Defendant, as such interstate common carrier by railroad, is subject to the provisions of the Act of Congress approved February 4, 1887, and acts amendatory thereof and supplementary thereto, known as Part I of the Interstate Commerce Act.

(b) The Issues.

This suit is a civil action at law, brought for the purpose of recovering from the defendant penalties as provided by said Train-Limit Law; it being alleged in the complaint that defendant operated, on March 2, 1940, a passenger train of [fol. 6082] more than 14 cars, and on April 4, 1940, a freight train of more than 70 cars, and that both such long-train operations were in violation of said law, and subject to the penalties therein prescribed.

Defendant, by its answer, admitted the operation of the aforesaid long trains, though denying that said operations were wilful or otherwise in violation of the law. Said defendant, in and by said answer, further alleged that said law was and is invalid and unconstitutional, as applied to its interstate trains and the interstate traffic carried therein, because in conflict with the Commerce Clause of, and the Due-Process Clause of the XIV Amendment to, the Constitution of the United States, and the corresponding Due-Process Clause (Section 4 of Article II) of the Constitution of Arizona, and also because in conflict with and an infringe-

ment upon certain federal statutes; to-wit, the Boiler-Inspection Act, the Safety Appliance Acts, and Section 25 (now Section 25) of Part I of the Interstate Commerce Act.

III

Description of Defendant's Lines of Railroad

(a) General Description of the System.

Defendant's main lines of railroad extend from San Francisco, California, to Portland, Oregon, and from San Francisco, across Nevada, to Ogden, Utah, and also from San Francisco, southeasterly to Los Angeles, California, and thence via Yuma and Tucson, Arizona, to El Paso, Texas, and thence to Tucumcari, New Mexico. At each of said points (other than Tucson and Yuma), as well as at numerous other points, defendant's lines connect with the lines of other interstate rail carriers, and thus enter into and become part of through routes for the transportation of freight between all parts of the United States, and to and from adjacent foreign countries.

[fol. 6083] Defendant's operations extend over 5,148 miles of main lines, and 3,500 miles of branch lines, producing a total system mileage of 8,648 miles of line. Including the miles of second (i. e., alternate or double) tracks, there are 9,524 main-track miles, 6,012 miles of said track miles being on main lines, and 3,512 miles of said track miles on branch lines. Defendant's sidings and yard tracks total 4,145 track miles, thus producing a grand total, for all tracks, of 13,669 track miles.

The above-described lines, generally known as the defendant's Pacific Lines, represent a total investment in roadbed and other fixed properties (not including rolling equipment), as of December 31, 1939, of \$729,056,899. The portion of said lines within Arizona, which consists of 1,208 road miles and 1,273 main-track miles, represents a total investment in road and fixed properties only (not including movable equipment), as of December 31, 1939, of \$68,876,025.

The total mileage of the main lines between Yuma, Arizona, and El Paso, including the alternate main lines via Phoenix and Douglas, hereinafter more fully described, is 1,069 road miles, representing a total investment, in roadbed

and fixed property only, as of December 31, 1939, of \$71,870.183.

Answer, par. III (2).

Sines, R. 46-52; *Wright*, R. 229-239; *Kirk*, R. 406-414; *Young*, R. 493-494; *Fertig*, R. 860-861, 866-868, 881; *Green*, R. 931; *Kraemer*, R. 973-978; *Randall*, R. 1029; *Triem*, R. 1108; *Hammond*, R. 1172-1173; *Warfel*, R. 1216; *Peckenpaugh*, R. 1336; *Mahoney*, R. 1844, 1870-1872; *Masson*, R. 1936-1938; *F. P. McDonald*, R. 2971; *Judson*, R. 2988.

Exhibits 1, 110, 111, 115, 145, 175.

[fol. 6084] (b) The Line in the Affected Territory.

(1) Location; principal stations; double track:

Defendant's aforesaid main line between Los Angeles and Tucumcari extends easterly from Los Angeles via Colton, Beaumont and Indio, California, and crosses the westerly boundary of Arizona immediately west of Yuma, 250 miles east of Los Angeles. Yuma is a division point at which an extensive freight terminal is maintained, where freight trains originate and terminate, and are made up and broken up. The main line principally used for the handling of freight traffic extends easterly and southeasterly through the cities and stations of Wellton, Gila, Picacho, Tucson, Mescal, Benson, Dragoon, Bowie, and San Simon to the station of Cavot, Arizona, at which point said line crosses the Arizona-New Mexico boundary line. Said line then continues easterly through the cities and stations of Steins, Lordsburg, Deming and Anapra, New Mexico, to El Paso, Texas, and thence northeasterly to Tucumcari, New Mexico. The distance from Cavot to Lordsburg is approximately 23 miles; from Cavot to El Paso, approximately 171 miles. The total length within Arizona of defendant's said main line from Yuma via Gila, Tucson and Bowie, last described, is approximately 392 miles.

In addition to the aforesaid main line, defendant also has an alternate main line in Arizona which departs from the Yuma-Gila-Lordsburg line at Wellton, 37 miles east of Yuma, and runs thence northeasterly to Phoenix, and thence easterly and southeasterly via Mesa, Chandler, and Coolidge to Picacho, a point 46 miles northwest of Tucson, where it joins the Yuma-Gila-Lordsburg line. The distance from Wellton via Phoenix to Picacho is 211 miles.

A second alternate line of defendant leaves the Yuma-Gila-Lordsburg line at Mescal, approximately 40 miles easterly [fol. 6085] from Tucson, and extends via Douglas, Arizona, to Anapra, New Mexico, where it rejoins the Yuma-Gila-Lordsburg line. The distance from Mescal via Douglas to Anapra is 295 miles.

The three main lines just described, considered together, afford to the defendant practically two lines for the entire distance between Yuma and El Paso; but, except for the double-track districts hereinafter mentioned, these lines are all operated as single track.

Defendant's Yuma-Gila-Lordsburg line, as above described, is double-track from Yuma to East Yard, a distance of 4.7 miles; thence single-track for a distance of 16 miles to Dome; thence double-track for a distance of 16.5 miles to a point near Wellton; thence single-track for a distance of 211.2 miles to Stockham; thence double-track for a distance of 42.4 miles to Mescal; thence single-track for a distance of 101.5 miles to Cavot, at which point said line crosses the Arizona-New Mexico boundary, as aforesaid; thence continues as single-track for a distance of 164.8 miles to Anapra; and thence is double-track for a distance of 7.1 miles to El Paso.

The alternate main line via Phoenix consists entirely of single-track, except for about two miles of double-track immediately east and west of the station at Phoenix. The second alternate main line via Douglas consists entirely of single track.

Defendant also has certain branch lines in Arizona, the more important of which are as follows: the Christmas Branch, extending easterly from McQueen on the Phoenix main line, a distance of 87 miles to Christmas; the Nogales Branch, extending southerly from Tucson a distance of 66 miles to Nogales, where it connects with the main line [fol. 6086] of the Southern Pacific Railway Company of Mexico, and thus affords a through route for the transportation of all kinds of traffic to and from points in Mexico; and the Globe Branch, which extends northwesterly 136 miles from Bowie, via Safford, Globe and Miami to Live Oak.

Answer, par. III (2).

Sines, R. 46-50, 61-63, 2512, 4223-4224; Masson, R. 1536-1540, 1935-1938; Kirkbride, R. 2034-2037.

2046-2047, 4053; *G. C. Baker*, R. 2352, 2358-2360, 2380-2384.

Exhibits 1, 115, 145, 154, 155, 175, 176.

(2) Ruling grades and curvatures:

The term "ruling grade," when employed hereafter in these findings, means that ascending grade, within a particular district or territory, which is of such length and location as to limit the amount of tonnage which a train may handle over such district or territory. Ruling grades are not usually continuous over any district or territory, and in fact are limited in length by topography to comparatively short stretches in any given district. Ruling grades are ordinarily short grades, and are not continuous; and long stretches of level or lesser grades generally prevail on each side of each ruling grade.

Kirk, R. 396-397; *Warfel*, R. 1355-1357.

The above-described main lines, both within and without Arizona, and particularly those portions thereof between Indio, California, and El Paso, Texas, are located for the most part in level territory where the grades are of comparatively little consequence. From Indio eastward to Yuma there is no ruling grade in excess of one per cent in either direction. From Yuma eastward to Gila the grade is generally slightly ascending; and ruling grades opposed [fol. 6087] to either eastward or westward traffic do not exceed .6 per cent: except that from Pembroke to Mohawk eastward, a distance of 4.0 miles, and from Kim to Mohawk westward, a distance of 3.3 miles, the ruling grade is one per cent; and except also that from Lava to Sentinel eastward, a distance of 4.1 miles, the ruling grade is 1.02 per cent. From Gila to Estrella, a distance of 18.9 miles, the line ascends eastward, the ruling grade being 1.02 per cent; and then descends eastward, a distance of 23.2 miles from Estrella to Maricopa, the ruling grade being .83 per cent opposed to westward movement. From Maricopa to Picacho, a distance of 39.7 miles, the line ascends with a maximum ruling grade of .5 per cent, and from Picacho to Tucson, a distance of 46.4 miles, the maximum ruling grade is 0.96 per cent.

From Tucson to Mescal, a distance of 39.7 miles, the line ascends eastward with a maximum ruling grade opposed to

eastward traffic of 1.06 per cent; and thence descends for a distance of 9.0 miles to Benson, with a ruling grade (opposed to westward traffic) of 1.4 per cent. From Benson to Dragoon, 21.3 miles, the line again ascends eastward, the maximum ruling grade opposed to eastward traffic being 1.4 per cent. The line then descends eastward for about 12 miles to a point east of Cochise, the ruling grade (opposed to westward traffic) being 1.1 per cent. At Cochise the grade becomes level, and further east ascends with slight gradient to Willcox, a distance of 8 miles. Between Willcox and San Simon, a distance of 38.5 miles, the maximum ruling grade opposed to eastward traffic is 0.91 per cent, and to westward traffic is 1.0 per cent, these grades controlling for short distances easterly and westerly from a summit at Raso. From San Simon the line ascends east- [fol. 6088] ward for a distance of 14.7 miles to Steins, with maximum ruling grades of 1.4 per cent; the Arizona-New Mexico boundary is crossed during this ascent at the station of Cavot, elevation 4,092 feet, 10.9 miles east of San Simon.

From Steins to Lordsburg, 19.4 miles, the line descends for a short distance with a ruling grade of 1.4 per cent opposed to westward traffic, the rest of the distance to Lordsburg being traversed with ruling grades of 1.0 per cent in each direction. From Lordsburg to El Paso, 148 miles, the ruling grades opposed to traffic in either direction are comparatively light and do not exceed one per cent.

On the line from Wellton to Picacho via Phoenix the ruling grades do not exceed one per cent in either direction, and in general do not exceed .6 per cent.

On the line from Mescal via Douglas to Anapra the ruling grades are likewise one per cent or less, and for substantial distances do not exceed .8 per cent in either direction.

In general, throughout the territory above-described, curvatures are light, and curves are comparatively infrequent. On the main line from Yuma via Gila and Lordsburg to El Paso, a total distance of approximately 560 miles, only 84.3 miles, or about 15 per cent, consist of curves track; and only about 5.5 miles, or less than one per cent, consist of curves of more than six degrees. On that portion of said Yuma-Gila-Lordsburg line within Arizona, a total distance, as aforesaid, of 392 miles, 84 per cent of the total mileage is straight track, and only 16 per cent curved

track, and only about one per cent of the total mileage consists of curves of more than six degrees. On the Well-ton-Phoenix-Picacho line, only 18.5 miles, or less than 9 per cent of the total of 211 miles, consist of curved track. [fol. 6089] On the Mescal-Douglas-Anapra line 51.7 miles, or 17.5 per cent of the total of 295 miles, consist of curves.

Where curved track exists in grade territory upon the lines above described, or elsewhere upon any of defendant's main lines, each of such curves is "compensated"; i. e., the grade is reduced around the curve to an extent such that the effect of the combined resistance to movement of tonnage afforded by the curve itself and by the grade upon the curve, is not greater than the corresponding resistance afforded by grade alone upon an adjacent stretch of "tangent" (straight) track. The compensated grade upon the curve is thus capable of being stated, and in common railroad practice is stated, in terms of the equivalent of rise expressed in per cent of distance along tangent track.

Grades, including ruling grades (as heretofore defined), are usually expressed in per cent of distance, or in feet of rise per mile of distance, and when so expressed in these findings are the "compensated" grades; i. e., they take into account such resistance to tonnage movement as is contributed by curvature as well as actual grade.

Answer, par III (2).

Kirkbride, R. 2038-2040, 2046-2056, 2064-2065, 4044-4050, 4053-4056.

Exhibits 155, 175, 301, 302, 303, 309, 310.

(3) Helper districts:

Those sections of the line where the grade and other physical conditions are such as to require the use of one or more additional locomotives in order to handle trains which elsewhere are normally handled by one locomotive, are customarily referred to as "helper districts." There are four regular freight helper districts for eastward trains [fol. 6090] on defendant's main lines in Arizona, as follows: From Gila to Estrella, 18.9 miles; from Tucson to Mescal, 39.7 miles; from Benson to Dragoon, 21.3 miles; from San Simon to Steins, New Mexico, 14.7 miles. The two freight helper districts from Tucson to Mescal, 39.7 miles, and from Benson to Dragoon, 21.3 miles, are operated as one freight-helper district in actual practice, in that the

additional helper locomotives and the employes operating them run through from Tucson to Dragoon, without detaching from the trains they are helping, during the nine-mile descent from Mescal to Benson.

Helper locomotives are not regularly required or normally used by defendant's westbound freight trains between Lordsburg and Gila, or by freight trains moving in either direction between Yuma and Gila, or Lordsburg and El Paso, or upon the two alternate main lines via Phoenix and Douglas.

Helper locomotives are usually required by westward freight trains and by many westward passenger trains ascending the grade from Indio to Beaumont, California, and by eastward freight trains, and many eastward passenger trains moving from Colton, California, to Beaumont. Helper locomotives are not used or required by trains descending the grades above described in any of the aforementioned territories.

Masson, R. 270; *Dyer*, R. 2022-2024; *Sines*, R. 2589-2590, 2595-2601, 4226, 4427.

Exhibits 155, 175.

(4) The affected lines well constructed:

Defendant's main lines in the affected territory are well constructed and carefully maintained, and fully capable of [fol. 6091] sustaining the heaviest and most powerful locomotives and cars owned or operated by defendant. Said main lines are equipped throughout with approved modern block signals and other numerous safety devices of modern type promoting the safety of operation.

J. B. Baker, R. 1466-1478, 1491-1495, 1509-1528; *Dyer*, R. 2017, 2021, 2022; *Kirkbride*, R. 2065-2131.

Exhibits 110 to 114, 157 to 159.

(c) Defendant's Lines in Nevada and Utah: Description: Comparison with Arizona Lines.

The operating conditions upon defendant's main lines across Nevada and Utah (briefly referred to in sub-paragraph (a) of this finding) are very similar to those upon the above-described lines between Yuma, Arizona and El Paso, Texas. The ruling grades in the Nevada-Utah territory are generally less than one per cent, and the lines

lie for the most part in desert and valley territory, where operating conditions are substantially as favorable as in Arizona and New Mexico; the only notable difference being that the climatic conditions in the winter are much more severe in northern Nevada and Utah. The maximum ruling grade encountered on defendant's main lines in Nevada and Utah, in either direction, is 1.5 per cent. The curvatures on said lines are, as in Arizona, light and relatively infrequent, in that there are long stretches of tangent track and flat curves; however, the percentage of curved track to the total main-line mileage is greater in Nevada than in Arizona, in that about 24.5 per cent of the main line mileage in Nevada consists of curved track.

Said Nevada-Utah lines are well constructed and maintained, in accordance with the same standards which prevail [fol. 6092] in Arizona, and are equipped with the same types of block signals and other modern safety devices in use in Arizona.

Answer, IFI (2).

Dyer, R. 2009-2010; Kirkbride, R. 2056-2064, 2105-2108, 2116-2132, 2134-2136, 2144-2146, 3876-3882, 4034-4064.

Exhibits 110, 156, 157, 158, 159, 301, 302, 303, 306, 307, 308, 309, 310.

IV

Character of Freight and Passenger Traffic Handled upon Defendant's Lines in Arizona and Adjacent Territory; Comparison with Nevada Traffic.

(a) Predominant Interstate Character of Arizona Freight and Passenger Traffic.

A substantial volume of traffic is handled in both the eastward and westward directions, over defendant's main lines in the territory affected by the law. This traffic is predominantly interstate in character.

92.74 per cent of the total revenue freight ton miles carried by all of the defendant's lines in Arizona during the five-year period, 1935-1939, inclusive, related to interstate freight, and only 7.26 per cent of said total related to intrastate freight. In the same five-year period 95.49 per cent of all the revenue passenger miles accumulated

on all of the defendant's lines in Arizona were interstate in character, and only 4.51 per cent were intrastate.

In the years 1938 and 1939, more than 68.5 per cent of all the revenue freight ton miles, and more than 74.0 per cent of all the revenue passenger miles, accumulated upon [fol. 6093] defendant's said Arizona lines, related to "overhead" or "bridge" freight and passenger traffic: that is, traffic originating outside the state, and crossing the state to destinations beyond.

A study of the total freight revenues earned by the defendant's lines in Arizona, such revenues being allocated to the State of Arizona in accordance with the formula prescribed by the Arizona Corporation Commission, developed that the revenues from handling interstate freight were, during said five-year period, 1935-1939, inclusive, 93.07 per cent of the total thus allocated, while the corresponding revenues from Arizona intrastate freight were but 6.93 per cent of said total. A similar study of passenger revenues earned by defendant's lines in Arizona, such earnings being also allocated in accordance with the formula prescribed by the Arizona Corporation Commission, developed that interstate passenger revenues were, during said five-year period, 1935-1939, inclusive, 95.25 per cent of the total thus allocated, and Arizona intrastate passenger revenues were but 4.75 per cent of said total.

64.77 per cent of said total of freight revenues allocated to Arizona for said five-year period accrued to defendant for the handling of bridge or overhead freight traffic, as above defined.

Masson, R. 1911-1947, 2225-2227, 2233, 2246-2252;
Sines, R. 2500-2509.

Exhibits 141, 142, 143, 144, 145, 146, 147, 148, 167,
170, 189, 190.

(b) Character of Commodities Transported: Need for Expedition.

The interstate traffic handled in defendant's freight trains in the affected territory consists principally of perishable agricultural products (fresh fruits, vegetables, melons, etc.), livestock, and manufactured products of relatively high intrinsic value. All of these classes of freight must be handled and delivered with the least possible delay.

During the year 1939 defendant handled 261,755 carloads of all kinds of freight, both interstate and intrastate, on its lines in Arizona, of which 104,739 carloads consisted of products of agriculture. 88,658 of said carloads consisted of fruits and vegetables and other perishable agricultural products; and there were 16,001 carloads of livestock, fresh meats, and other animal products. During 1939 defendant handled 190,828 carloads of freight on its lines in New Mexico, of which 96,250 were products of agriculture. 87,126 of said carloads consisted of perishable agricultural products; and there were also 13,273 carloads of livestock, fresh meats, and other animal products.

Approximately 59 per cent of the eastbound cars forwarded to El Paso by defendant during the five years, 1935-1939, inclusive, were loaded refrigerator cars; and about 53 per cent of the westward cars forwarded by defendant from El Paso during the same period were empty refrigerator cars. Such refrigerator cars are designed to be, and in nearly all cases are used for the transportation of various kinds of perishable freight, other than livestock.

Practically all of the traffic handled by defendant eastward into El Paso or westward from that point did, during the period stated, and as a general rule does move over defendant's main lines in Arizona, and by far the greater portion thereof did, and as a general course does originate or terminate at points beyond (west of) Arizona. A substantial proportion of the traffic, other than that handled in refrigerator cars moving across Arizona, and received [fol. 6095] at or forwarded from El Paso by defendant, consists of either livestock or so-called manifest freight. 42.78 per cent of all the loaded freight-car mileage accumulated in Arizona in the five years, 1935-1939, inclusive, was accumulated by loaded Pacific Fruit Express refrigerator cars; while 56.21 per cent of all the empty freight-car miles accumulated in Arizona during the same five-year period were accumulated by empty Pacific Fruit Express refrigerator cars.

Such perishable and livestock traffic, as well as the so-called manifest freight, must be handled promptly, in order to avoid damage and shrinkage and permit of orderly marketing, and also, in the case of livestock, to comply with the requirements of the Federal Twenty-eight-Hour Law. Empty westbound refrigerator cars must be handled by

defendant over its lines, particularly the main lines in the affected territory, as speedily as practicable in order to insure a dependable supply of such cars for the loading of the highly perishable agricultural traffic originating in the California and Arizona producing areas.

Kirk, R. 410-414; *Fertig*, R. 870-872; *Cartmill*, R. 1768-1769, 1775-1776; *Mahoney*, R. 1841-1844; *Sines*, R. 63-64, 2500-2509; *Dyer*, R. 2008-2009; *Masson*, R. 2225-2230, 2233, 2246-2252, 3177-3184; *G. C. Baker*, R. 2340-2344, 2670, *Exhibits* 167, 168, 170, 175, 189, 190, 216, 217, 218.

(c) Arizona Traffic Compared with Traffic Across Nevada.

The freight traffic handled upon defendant's main lines crossing Nevada and Utah is similar to that handled in and across Arizona; in that it is predominantly interstate in character, and the loaded movement consists principally of perishable agricultural products, livestock and the products thereof, and manufactured articles of relatively high value, while the empty car movement consists, in large part, of refrigerator cars being returned from eastern markets for further loading in the California and Oregon producing areas. Moreover, the total volume of the freight traffic across Nevada is approximately the same (on the average, about 5 per cent greater) as the corresponding volume of freight traffic in Arizona. About 50 per cent of the cars moved eastward by defendant during the year 1939 over said lines across Nevada and Utah, and to Ogden, Utah, were refrigerator cars carrying perishable freight, while similarly 55 per cent of the cars moving eastward to El Paso during 1939 were loaded refrigerator cars. About 47 per cent of the cars moved westward during the said year from Ogden over said lines were empty refrigerator cars being moved to the producing areas of California and Oregon for further loading, while 49 per cent of the cars moving westward through El Paso were empty refrigerator cars. 38.59 per cent of all the loaded freight-car miles accumulated in Nevada during the five years, 1935-1939, inclusive, were accumulated by loaded refrigerator cars of the Pacific Fruit Express Company. 55.01 per cent of all of the empty freight-car miles accumulated in Nevada during the same five-year period was

accumulated by empty Pacific Fruit Express Company refrigerator cars.

Dyer, R. 2008-2009: *Masson*, R. 2232-2252, 3179-3184; *Sines*, R. 2500-2508, 2535-2537.

Exhibits 149, 150, 167, 169, 170, 189, 190, 217, 219, 277, 279, 280.

[fol. 6097]

V

The Train Limit Law: History and Text

On May 16, 1912, the Governor of the State of Arizona approved an act of the Legislature of that State entitled "An Act limiting the number of cars in a train", which act was afterwards, on referendum at a general State election held November 5, 1912, approved by a majority of the voters of said State voting at said election (Laws, 1913, Referendum, p. 15; Sections 2166-2168, Revised Statutes of Arizona, 1913; Civil Code of Arizona, Section 647, Arizona Revised Statutes, 1928; Section 69-119, Arizona Annotated Code, 1939), and ever since has been and now is in full force and effect. Said act has no preamble, and reads as follows:

"Section 1. It shall be unlawful for any person, firm, association, company or corporation, operating any railroad in the State of Arizona, to run, or permit to be run, over his, their, or its line of road, or any portion thereof, any train consisting of more than seventy freight, or other cars, exclusive of caboose.

"Section 2. It shall be unlawful for any person, firm, association, company or corporation, operating any railroad in the State of Arizona, to run, or permit to be run, over his, their, or its line of road, or any portion thereof, any passenger train consisting of more than fourteen cars.

"Section 3. Any person, firm, association, company or corporation, operating any railroad in the State of Arizona, who shall willfully violate any of the provisions of this act, shall be liable to the State of Arizona for a penalty of not less than one hundred dollars, nor more than one thousand dollars, for each offense; and such penalty shall be recovered, and suits therefore brought by the attorney general, or under his direction, in the name of the State of Arizona, in any county

[fol. 6098] through which such railroad may be run or operated, provided, however, that this act shall not apply in cases of engine failures between terminals.

"Section 4. All acts and part of acts in conflict with the provisions of this act are hereby repealed."

Said act is generally known, and throughout these findings is referred to, as the Arizona Train-Limit Law.

Complaint, par. I.

Answer, par. I (1); par. II (1).

VI

Recent Improvements in Defendant's Transportation Plant, Both Generally, and in the Territory Affected By the Law:

(a) Improvements In Track, Roadbed, Bridges and Other Fixed Structures.

In the years since the enactment of the Train-Limit Law in 1912, and especially since 1923, defendant has made numerous, substantial, permanent improvements in the track, roadbed, bridges and other fixed structures upon its lines of railroad heretofore generally described in paragraph III of these findings, and particularly upon its main lines in the affected territory.

Said improvements have included the following, among other things: The replacement of lighter weights of rail, in main tracks and sidings, by heavier rail, including, particularly in Arizona, replacement of lighter rail in main lines by rail weighing 90 pounds or more per lineal yard; replacement of gravel ballast, in the roadbed, by crushed rock and slag ballast, and the placement of such [fol. 6099] ballast at greater depths under the track than was previously the practice; constant and thorough renewal and replacement of ties, and the use of more ties per mile, of better and more costly types; constant repair and renewal of bridges, trestles and culverts; and replacement, where needed, of wooden bridges, trestles, and culverts by steel or concrete structures; separation of grades at numerous rail-and-highway crossings, and installation of automatic warning signals at numerous other grade

crossings; construction of additional double track; construction of additional yard and terminal facilities at various points; installation of improved types of block signals, and replacement of older types by more modern types; construction, where needed, of interlocking signal plants; and the acquisition in 1924 of the lines of the former Arizona Eastern and El Paso and Southwestern Railroad Companies, following which, in 1924-1926, defendant constructed and reconstructed the lines between Wellton and Picacho via Phoenix, so as to provide the alternate main line via Phoenix heretofore referred to.

The aforesaid improvements have been accomplished only by the expenditure of large sums of money.

During the years 1924 to 1939, inclusive, defendant expended more than \$162,000,000 for net additions and betterments (after allowance made for retirements) to the roadbed and fixed structures (not including rolling stock or other movable equipment) upon its railroad system in the states of California, Nevada, Utah, Oregon, Arizona, New Mexico and Texas, known as its "Pacific Lines", and heretofore described in paragraph III of these findings.

In the same period the net investment by defendant (over and above retirements) for permanent improvements made [fol. 6100] to its roadbed and fixed structures in the territory between Yuma and El Paso was more than \$21,000,000; which figure does not include any amounts expended by defendant in acquiring the properties formerly owned and operated by the El Paso and Southwestern and Arizona Eastern Railroad companies, as above mentioned.

This net additional expenditure, over and above retirements, made in Arizona alone by defendant for permanent improvements to roadbed and fixed structures, during said period 1924-1939, was more than \$18,400,000. None of the above figures includes any sums of money spent by defendant in the acquisition and improvement of rolling stock, or other movable equipment.

In 1912 the sidings and passing tracks on defendant's main line in Arizona were not generally of sufficient capacity to hold freight trains of substantially more than 70 cars, including engine and caboose. While said sidings have been greatly improved, as aforesaid, since 1912, and particularly since 1920, by being relaid with heavier rail, and by

having ties, ballast, and embankments renewed, they have not in general been extended beyond their former capacities.

J. B. Baker, R. 1466-1478, 1491-1495, 1509-1528;

Dyer, R. 1998; *Kirkbride*, R. 2050, 2093-2131;

Herbert, R. 2830-2839, 2857-2858.

Exhibits 110, 111, 112, 113, 114, 157, 158, 159, 197, 200, 201.

(b) Improvements in Locomotives, Cars and Equipment.

The locomotives, cars and equipment used on defendant's lines generally, including the lines affected by the law, have been substantially improved during the years since 1912, and notably since 1923.

[fol. 6101] As to the locomotives, such improvements have included the building, purchase, or acquisition by other means, of newer and heavier types of locomotives, capable of rendering speedier and more efficient service and of withstanding more severe service conditions, and having substantially greater hauling capacity, than the locomotives previously in service; and the retirement of the older, smaller, and less efficient types, which have been largely replaced by the newer locomotives. Such newer and heavier locomotives are equipped with the latest and most modern devices, designed to promote safety, efficiency and economy of operation; which devices include, among others, the following: super-heaters, feed-water heaters, air pumps of newer design, air reservoirs of increased capacity, heavier frames and running gears, improved and strengthened brake equipment, back-pressure indicators, automatic stokers for coal-burning locomotives, and power-reverse gears. Many of the older locomotives, where retained in service, have been improved and brought to a higher state of efficiency by placing upon them certain of the devices above enumerated, as well as other devices not herein specifically mentioned.

The locomotives and cars presently in use in freight and passenger service on the lines in Arizona are, in most instances, the same kinds and types as those heretofore or presently in similar service in Nevada and Utah, and include the most modern types owned by defendant. Such locomotives were acquired expressly for the purpose of handling, and in several years of actual operation have demonstrated that they are fully capable of handling in

the Nevada-Utah territory, freight trains consisting of substantially more than 70 cars, either loaded or empty, and passenger trains of more than 14 cars; and, except to the extent that helper locomotives are or may be required on [fol. 6102] certain helper districts in Nevada, the handling of such long trains in said states, by single locomotives of the same types as are now used by defendant in Arizona, is the ordinary, customary, and standard practice. Locomotives of the types now in use in Arizona have recently been, and likewise presently are, in use on those portions of defendant's lines in California and New Mexico, adjacent to the Arizona boundary line, in service similar to that for which they are employed in Arizona; and in such service said locomotives have demonstrated that they are fully capable of handling long freight and passenger trains, as a regular, customary, and standard practice.

Defendant has expended large sums of money in recent years in the building and purchase of said newer and more powerful locomotives. The total so expended by defendant during the period 1922-1939, inclusive, was \$46,216,000, which expenditure enabled defendant to acquire during that period 409 new locomotives, having a total tractive power of 34,244,070 pounds. These expenditures were in all instances made pursuant to express authority to that end, granted by the Interstate Commerce Commission under the provisions of Section 20a of the Interstate Commerce Act.

The improvements made since 1912 in the cars in service upon defendant's aforesaid lines of railroad have included the purchase or building of newer cars equipped with the latest and most modern devices and appliances and of stronger construction than the cars previously in service, and the retirement and withdrawal from service of the older, weaker cars, which have been largely replaced by the cars of later types.

All cars now in use for the handling of freight in through and interchange service (i. e., in service involving movement over more than one railroad) upon defendant's lines are built of steel or with steel underframes; cars having wooden underframes, largely in use in 1912 and previously, have been entirely withdrawn from such service. Refrigerator cars constitute approximately 50 per cent of the freight cars handled in defendant's freight

trains in the affected territory; and almost all of the refrigerator cars handled by defendant are owned by the Pacific Fruit Express Company, a corporation affiliated with defendant. All such refrigerator cars, and all of the other freight cars owned or used by defendant, are equipped with trucks having cast-steel side frames. The use of the older arch-bar type of truck has been entirely discontinued.

The draft gears and draft rigging on all such cars have been greatly improved. All of the refrigerator cars, and more than 80 per cent of the freight cars of other types owned by defendant and used in through or interchange service, are equipped with modern friction draft gears and modern draft appliances.

Modern, single-plate cast iron wheels are in universal use upon both the freight and refrigerator cars aforesaid, the older, double-plate type of wheel having been replaced.

Numerous improvements have been made in the air-brake mechanism of said cars; examples of such improvements being (1) the installation of heavier graduating springs in the triple valves, as a result of which so-called unintended (undesired) emergency action by the air brakes has been practically eliminated; (2) the development and subsequent adoption (in 1933) of an improved type of freight-brake valve known as the "AB"; which type is now standard upon all new cars built since 1933, and also required (by the interchange code) to be applied on all older cars not later than January 1, 1945. Numerous other improvements, not herein separately mentioned, have also been made in said freight cars, operated in defendant's trains in the affected territory, and upon its railroad lines generally.

All passenger cars now in use on defendant's main lines, including sleeping and other cars owned by the Pullman Company, are now built entirely of steel, the use in passenger trains of cars having wooden bodies, which was common in 1912 and previously, having been entirely discontinued. The braking appliances, couplers, draft gears and draft rigging, wheels, and other features of said cars have been greatly strengthened and improved, and numerous other devices and improvements, not herein separately mentioned, have been added to such passenger cars, all with the purpose and result of providing greater safety and comfort for the traveling public and employees riding

in such cars, and greater ease, safety and economy of operation of the trains in which such cars are run.

Leriche, R. 72-83, 86-112, 145-146; *Russell*, R. 118-144; *Parke*, R. 1397-1418, 1431-1465; *Cartmill*, R. 1779-1821; *Dyer*, R. 1998-2000, 2004-2005, 2016; *Masson*, R. 2295-2299; *Sines*, R. 2467-2473; 3148-3149, 4226-4227; *Browning*, R. 2863-2894; *Burke*, R. 2959-2962; *F. P. McDonald*, R. 2964-2967; *Bohnstengel*, R. 3078 3142; *Barker*, R. 3436-3441; *Durnil*, R. 4390-4391, 4448, 4462-4265; *Kennedy*, R. 4505-4507, 4516; *Cooper*, R. 4264-4265, 4532-4535; *Shaw*, R. 4910, 4935-4936; *Fifield*, R. 5194, 5208, 5210-5211, 5222; *Menzies*, R. 5240.

Exhibits 2, 3, 4, 5, 6, 7, 107, 108, 109, 135, 136, 137, 174, 183, 189, 204, 210, 212, 247, 396.

[fol. 6105] (c) Purpose of the Improvements Made By Defendant: Adequacy of Defendant's Present Track, Structures, and Equipment To Permit Operation of Long Trains

The expenditures above referred to, and the improvements and enlargements of defendant's transportation plant thereby effected, and the improvements, additions and betterments otherwise made by defendant, both upon its lines generally and particularly in the territory affected by the law, as hereinbefore set forth, were made and undertaken by defendant for the primary purpose of enabling greatest possible safety, efficiency, and economy and to discharge its public duty as a common carrier.

Said expenditures, particularly those made during and since the year 1923, were undertaken by defendant concurrently with and as a part of the general program of betterment of the railroad transportation plant of the said defendant to operate its railroad lines with the United States formulated and agreed upon in 1923 by the United States railroads, including defendant, and hereinafter more fully referred to.

Defendant's track, roadbed, bridges, and other structures upon its main lines in the territory affected by the law are given regular and exacting inspections, and are thoroughly and carefully maintained, and have been at all times herein mentioned and now are in excellent physical condition. They are fully capable of sustaining safely the

weight of the heaviest equipment, whether locomotives, loaded cars, or other movable equipment, owned or operated by the defendant. The locomotives presently in use or available for use in the affected territory are, as before stated, fully capable of handling freight trains consisting of substantially more than 70 cars, either loaded or empty, or both, exclusive of caboose, and passenger trains of more [fol. 6106] than 14 cars, over the main lines in that territory; and the cars operated in said trains are of adequate strength and construction, and equipped with adequate appliances and devices to permit of their being safely operated, in train units of substantially more than 14 or 70 cars, as the case may be. There is no reason, whether from the standpoint of climatic conditions, or track, grades, curvatures, or other operating conditions, or the strength or capacity of road, structures, and equipment now being used and available, why defendant cannot operate and continue to operate upon its main lines in the affected territory, as elsewhere upon its system in comparable or more difficult territory, a very substantial number of freight-train units of many more than 70 cars, exclusive of caboose, and passenger-train units of more than 14 cars. If defendant were relieved of the restrictions of the train-limit law, it would at once undertake, and thereafter continue and expand such long-train operations in the affected territory.

As hereinafter more fully set forth, defendant operated long passenger trains in the affected territory on 62 occasions during the months of March and April, 1940, and also operated some 302 or more long freight trains in said territory during the month of April, 1940; and thereby demonstrated that such long-train operation is wholly practicable in said territory, and results in greater safety, efficiency, and economy.

Parmelee, R. 282-374; 475-478; *Dyer*, R. 2021-2022;

Kirkbride, R. 2068-2093, 2105-2107; *Sines*, R. 3357-3362, 3427-3432.

Exhibits 15 to 22, inclusive, 234, 246, 294, 295.

[fol. 6107]

VII.

Defendant's Methods of Operation, Past and Present

(a) Operating Subdivisions: Runs of Crews and Locomotives: Operating Rules: Inspections.

(1) Operating divisions and subdivisions:

In the operation of its lines generally, defendant has subdivided its system into nine operating divisions; and each of the said divisions is further subdivided into operating subdivisions. The stations at the termini of said subdivisions are usually designated as freight-train terminals, and the through freight trains operated by defendant generally originate at such terminals, moving over the subdivisions to the next succeeding terminals, where their runs terminate.

That portion of defendant's main lines hereinbefore described, which extends between Los Angeles and Yuma, Arizona, forms a part of defendant's Los Angeles Division. The lines between Yuma and Tucson, together with the eastbound main track in the double-track territory between Tucson and Mescal, and the line from Mescal via Bowie to Lordsburg, as well as the Nogales, Christmas and Globe branches have, since July, 1930, constituted the Tucson Division. The westbound main track between Tucson and Mescal, together with the line from Mescal via Douglas to Anapra, and from Lordsburg to Tucumcari via El Paso have, since July, 1930, constituted the Rio Grande Division. Prior to July, 1930, the line between Tucson and Lordsburg, including the Globe branch, was part of the Rio Grande Division, which division then included also the line between Tucson and El Paso via Douglas, but not the line between El Paso and Tucumcari. Said line last mentioned formed a separate division called the New Mexico Division. In July, 1930, the present divisional boundaries, above described, were established, and the New Mexico and Rio Grande divisions were merged.

All of the lines in Nevada east of the station of Lawton, Nevada, including also the lines in Utah, as well as certain lines in northeastern California, and a portion of the narrow-gauge branch line in Owens Valley of California, are now, and since November, 1929, have been operated as defendant's Salt Lake Division.

That portion of the Salt Lake Division north of Wendel, California, was added to the division in November, 1929, at which time the line from Fernley, Nevada, to Wendel, formerly classed as branch line, was reclassified as main line. The portion of the main line in Nevada between the Nevada-California boundary line and Lawton, Nevada, is a part of defendant's Sacramento Division.

The following stations upon the main lines in the affected territory are designated as freight-train terminals: Los Angeles, Indio, Yuma, Gila, Tucson, Lordsburg, El Paso; upon the Phoenix line, Phoenix; and upon the Douglas line, Douglas. At those points freight trains originate and terminate, and the runs of freight-train and engine crews, and in some instances of the locomotives of such freight trains, begin and end.

Through freight trains arriving at El Paso are largely broken up and reswitched before the cars handled therein receive further movement. Through freight trains arriving at Yuma are also generally, although not always, switched and reconsisted to a substantial extent before further movement takes place; and in particular, locomotives and cabooses are invariably changed at that point. At Gila through freight trains arriving from either direction receive little, if any, substantially reconsisting, other [fol. 6109] than the changing of cabooses and locomotives; and in some instances locomotives are not changed. At Lordsburg, in those instances where schedule and other requirements permit, through freight trains of less than 70 cars arriving from the west are reconsisted into the longer trains permitted by the New Mexico law; and all west-bound long freight trains arriving at Lordsburg are reconsisted into short trains in order to conform to the Arizona law. When not thus shortened or lengthened, trains generally pass through the Lordsburg terminal without substantial reconsisting other than the changing of cabooses, and in some instances, of locomotives. All through or local freight trains moving in either direction terminate at Tucson. The locomotives, crews and cabooses on all such trains are changed at that point; and in many instances the trains are substantially reconsisted.

Freight trains operating eastward over the alternate main line between Wellton and Picacho generally originate at Yuma, and move through to Phoenix, where they are largely reconsisted, crews and locomotives being changed;

such trains then move from Phoenix to Picacho, and thence to Tucson, where they terminate. The westward operation over the Phoenix line is similar. Freight trains operating over the alternate main line via Douglas generally originate at either Tucson or El Paso, and run to Douglas, where crews and locomotives change, and said trains then continue to the terminals at El Paso or Tucson, where they terminate.

Defendant's eastbound main-line passenger trains in the affected territory originate at Los Angeles, with the exception of one train operated on alternate days during the winter season, which originates at Phoenix. Such trains carry the same names and numerical identifications throughout their movement over defendant's lines. Defendant's westbound main-line passenger trains in said territory likewise carry the same names and numerical identifications throughout their movement over defendant's lines. All said westbound trains originate at or east of El Paso, and except for one train operated on alternate days during the winter season, which terminates at Phoenix, all said trains run across Arizona and terminate at Los Angeles. Neither the eastbound nor westbound passenger trains are generally reswitched while en-route, except where necessary to adjust their consists to the 14-car restriction, or to pick up or set out individual cars at intermediate points.

Sines, R. 61-66, 2485-2491, 2531-2533, 2792-2805, 3163, 3169-3170, 3309-3313, 4222-4224; *Kirkbride*, R. 2034-2036; *G. C. Baker*, R. 2340-2342, 2669-2697, 2380-2382; *Herrell*, R. 2732, 2742-2749; *Garverick*, R. 3024; *Herbert*, R. 3069.

Exhibits 154, 155, 185, 186, 199, 214.

(2) Runs of crews and locomotives:-

The district between the terminals at Los Angeles and Yuma constitutes a through run for passenger-train and engine crews. Freight-train crews operating on said district are ordinarily changed at Indio. The district between Yuma and Tucson, via either Gila or Phoenix, constitutes a through run for passenger-train crews, but the through runs for freight-train crews are between Yuma and Gila, and Gila and Tucson on the main freight line, and

between Yuma and Phoenix, and Phoenix and Tucson, on the alternate main line via Phoenix. The district between Tucson and Lordsburg constitutes a through freight run for both engine crews and train crews. Engine crews on [fol. 6111] passenger trains also run between Tucson and Lordsburg, changing at the latter point; but train crews on passenger trains run through between Tucson and El Paso. The district between Lordsburg and El Paso constitutes a through freight run for both engine crews and train crews, and also for engine crews of passenger trains. The district between Tucson and Douglas, and likewise the district between Douglas and El Paso, constitute through runs for freight crews, and also for engine crews on passenger trains. Train crews on passenger trains operating via Douglas run through between Tucson and El Paso, without changing at Douglas.

Passenger locomotives generally run through between Los Angeles and El Paso without change, although occasionally such locomotives are "dropped back" (as hereinafter described) at Tucson. Freight locomotives generally run through between Yuma and Tucson, and between Tucson and El Paso, usually "dropping back" at Gila and Lordsburg; i. e., the locomotive, upon arrival, is detached from its train and used on the next succeeding train, being replaced by (and in turn replacing) another locomotive of the same general class and type, assigned to the same character of service. Such "dropping back" permits the locomotives to be inspected, refueled and otherwise serviced between trains, and at the same time avoids any incidental delay to the movement of the trains concerned.

Sines, R. 61-66, 2583-2601, 2606-2607, 3169-3170, 3257, 4223-4224; *Baker*, R. 2670-2684; *Herrell*, R. 2736-2737.

(3) Operating rules: 1

The operation of defendant's freight and passenger, and other trains, in the affected territory and also upon its [fol. 6112] system generally (including the lines in Nevada and Utah) is governed by written rules, embodied in two books of rules, issued to all employes in train service, and called (1) "Rules and Regulations of the Transportation Department", and (2) "Rules and Regulations Gov-

erning Care and Operation of Air Brake and Air Signal Apparatus". Said Rules and Regulations provide general instructions governing such operation, which are required to be observed by all employes concerned, except where deviations are permitted by written rule or bulletin, to meet special local conditions; and said Rules and Regulations constitute a complete and adequate code, sufficient, if fully complied with and observed by said employes, to insure the safe operation of defendant's trains under all circumstances. Responsibility for the enforcement and observance of said rules rests upon defendant's operating officers.

Dyer, R. 2006-2007; *Check*, R. 4608-4609; *Darnil*, R. 4419-4420; *Stevenson*, R. 4621-4624; *Fifield*, R. 5225-5231; *Menzies*, R. 5249-5256.

Exhibits 319, 320.

(4) Inspections:

The operation of defendant's trains, in the affected territory and also upon its system generally (including the lines in Nevada and Utah), is accompanied by systematic inspections of the equipment, in order to make certain that said equipment is in safe operating condition, and free of defects requiring repair or replacement; and such equipment is thoroughly and carefully maintained.

Cars received by defendant from its connections, at interchange points (such as El Paso), are subjected to thorough [fol. 6113] inspections, before being accepted for handling; such inspections being in accord with the code promulgated by the American Railway Association (now the Association of American Railroads). Cars receive further inspections where they pass through terminals, either by car-inspection forces there maintained for that purpose, or by the crews of the trains in which the cars are placed. Cars also receive frequent inspection by train crews while on the road between terminals, and in particular are required to be inspected at designated inspection stops, as well as at all other stops as far as practicable. Refrigerator cars of the Pacific Fruit Express Company, which as before stated comprise a large proportion of the cars handled in the affected territory, undergo a separate, thorough inspection and reconditioning prior to each movement, under load, away from the principal producing areas.

Such inspection and maintenance are for the purpose of insuring that the equipment handled in defendant's trains shall be in the best possible condition, so as to permit said cars to be handled safely, whether in long-train or short-train units; and, as hereinafter shown, said inspection and maintenance are fully adequate to, and do, accomplish that purpose.

Cartmill, R. 1798-1806; *Sines*, R. 2607-2610, 3239; *Browning*, R. 2880, 2863-2884; *Reid*, R. 2936-2942, 2947-2950; *Burke*, R. 2955-2958, 2962-2963; *F. P. McDonald*, R. 2968-2972. See also Finding XIII (d).

Exhibits 137, 203, 204.

- (5) Similarity of operating methods, rules, records, etc., on defendant's lines in Nevada and Utah to those in the affected territory:

Defendant's train operations upon its lines in Nevada and Utah are subject to the same code and system of operating [fol. 6114] rules, and are carried on in accordance with the same standards and methods of operating practice, which prevail upon its system generally, and particularly upon its lines in the affected territory.

The same officials who have jurisdiction over defendant's system supervise all said operations. A number of officials of defendant have at different times served as division officers, in immediate charge of operations and maintenance, on the lines in both Arizona and Nevada.

The laws of Nevada and Arizona relating to the numbers and classes of employes required upon trains of various kinds are substantially similar, and their effects, in so far as concerns defendant's train operations in the two states, are practically identical.

The same equipment, including both locomotives and cars, is used interchangeably in both the affected territory and on the lines in Nevada and Utah. As heretofore more fully set forth, traffic in these two territories, as to volume, density, predominate interstate character, distribution between loads and empties, and generally in all other essential characteristics, is closely and substantially similar.

Operating conditions, from the standpoint of those physical characteristics such as grades, curvatures, and the like, are, as previously stated, also shown to be very similar in

the two territories; the only point of difference being that the weather conditions in Nevada and Utah, in the winter months, are much severer than in the affected territory.

The records maintained by defendant, and the numerous statistical and other reports required to be rendered and made by defendant to the Interstate Commerce Commission [fol. 6115] and other public authorities, relating to defendant's operations and the results thereof, are developed, maintained and rendered, in accordance with and pursuant to systems and methods of accounting and reporting which are applicable alike, and without material difference, to both the affected territory and the lines in Nevada and Utah.

Except for the train-limit law, and the modifications of railroad operating practice made necessary in the affected territory by the restrictions of said law, there is no substantial difference in operating methods, or equipment, or the character of the railroad plant and structures generally, or in the nature of the business carried on, as between the lines in the affected territory on the one hand, and the lines in Nevada and Utah on the other. Comprehensive comparisons between Arizona and Nevada, and between the Tucson and Salt Lake Divisions, as to the results and incidents of operations, therefore afford a reliable and highly accurate method of testing and determining the effects and results of the law. **D**

Dyer, R. 2005-2025; *Masson*, R. 2246-2252; *Sines*, R. 52-53, 2474-2475, 3145-3149, 3844-3845, 4221-4222;

Sullivan, R. 3723; see also annotations to Findings

III (c) and IV (c).

Exhibits 8, 9, 170, 184, 191, 195, 212, 260, 305.

(b) Lengths of Defendant's Trains

(1) Train lengths on the system generally:

Prior to about the year 1925 defendant operated comparatively few long freight or passenger trains over any of its lines. Commencing in 1926, and continuing thereafter down to the present time, defendant has followed and now follows, [fol. 6116] upon its entire system (except in the affected territory), the practice of operating a substantial number of long trains, when and where operating and traffic conditions permit or render such practice desirable; and both the average lengths of defendant's trains, expressed in the number of cars contained therein, and the proportion

borne by the number of long trains to the total number of those operated have tended (except in the affected territory aforesaid) to increase from year to year, throughout that period.

In 1922, the average length of all freight trains operated by defendant upon its entire system, including its lines in Arizona, was 42.4 cars, exclusive of caboose. The corresponding figures for later years were as follows: for 1926, 47.7 cars; for 1930, 51.5 cars; for 1934, 51.7 cars; for 1936, 50.8 cars; for 1938, 52.0 cars; for 1939, 53.6 cars.

A study of the lengths of freight trains operated on substantially all of defendant's main lines in the several states (other than Arizona) where it operates, covering some 61,943 trains, operated during four representative months of 1939, shows that long freight trains were in proportion to the total number of trains operated, as follows: In Oregon, 38.16 per cent; in California, 21.74 per cent; in Nevada, 66.20 per cent; in Utah, 85.85 per cent; in Texas, 1.34 per cent; in New Mexico, 9.06 per cent. For the system as a whole, excluding Arizona, long trains constituted 27.03 per cent of the total number operated.

A similar study of system passenger-train operations over the principal main routes, during the year 1939, shows that the percentages of long passenger trains, in relation to the total of through passenger trains operated, were as follows: on the main route from San Francisco across Nevada to Ogden, 43.79 per cent; on the main route from San Francisco [fol. 6117] to Portland, Oregon, 19.76 per cent; on the "Valley Route" from San Francisco, via Fresno, California, to Los Angeles, 15.35 per cent; on the "Coast Route" from San Francisco, via Santa Barbara, California, to Los Angeles, 34.39 per cent; on the route from Los Angeles across Arizona to Tucumcari, for the portion between Los Angeles and Yuma, 7.64 per cent, and for the portion between El Paso and Tucumcari, 3.57 per cent. No longer passenger trains were operated in Arizona by defendant in 1939.

Dyer, R. 2001-2003; 2017, 2026-2027; *Masson*, R. 1947-1954; *Herbert*, R. 2399-2401, 2416-2418, 2429-2430, 2442-2445; *Sines*, R. 2483-2495, 3142-3144; *Fifield*, R. 5180-5183, 5220.

Exhibits, 149, 150, 162, 177, 178, 179, 180, 185, 186, 187, 188, 211.

- (2) Train lengths in Arizona, past and present: Comparison with other portions of the system, and with the system as a whole.

In 1912, and prior thereto, defendant operated very few long freight or passenger trains in Arizona. The average main-line freight train in Arizona in 1912 consisted of about 47 cars; the average passenger train of 9 or 10 cars. During the first six months of 1912, only 16, or 0.38 per cent, out of a total of 4187 main-line freight trains operated in Arizona, consisted of 71 cars or more; the longest of said trains (two in number) contained 75 cars each. During the same period, defendant operated no regular passenger trains in Arizona of more than 14 cars, but did on 14 occasions (out of a total of 3118 passenger trains operated) run special trains having 15 or more passenger-train cars each.

In the years between 1912 and 1922, the average lengths of defendant's freight trains in Arizona increased about [fol. 6118] 15 per cent; but since 1922 there has been no improvement. Thus the average number of cars per freight train in 1912 was 48.39; in 1917, 40.82; in 1922, 55.79; in 1927, 51.44; in 1932, 56.76; in 1937, 52.37; in 1938, 55.5; and in 1939, 54.82. For the four-year period 1922-1925, the average was 54.42; for the four-year period 1936-1939, 53.85. The largest annual average of number of cars per train achieved in Arizona was 57.13, for the year 1934.

In Nevada, on the other hand, freight-train lengths have increased substantially since 1912, and more notably since 1922. The average number of cars per freight train in Nevada in 1912 was 40.58; in 1917, 41.07; in 1922, 48.92; in 1927, 69.17; in 1932, 81.06; in 1937, 74.43; in 1938, 78.77; and in 1939, 78.46. For the four-year period 1922-1925 the average in Nevada was 53.09; for the four-year period 1936-1939, 76.28. The largest annual average number of cars per train achieved in Nevada was 86.67, also for the year 1934.

Average freight-train lengths on defendant's system as a whole, even though affected to some extent by the restrictions of the Arizona law, have also increased in recent years, and particularly since 1920. Comparing the Tucson Division main line (which is representative of and includes the greater part of the territory subject to the 70-car restriction) with the Salt Lake Division main line (which is rep-

representative of and includes substantially all of the Nevada and Utah operations), and also with main-line operations upon the system as a whole, it appears that the system average train length, expressed in number of cars per train, including caboose, increased from 43.2 in 1920 to 52.8 in 1925, and thereafter to 58.5 in 1930, continuing thereafter without substantial variation either upward or downward until and including 1939, when the average was 60.1. On the Tucson Division, the corresponding figure in 1920 was [fol. 6119] 48.1, increasing to 57.9 in 1922, to 59.6 in 1925, and to 61.0 in 1930, and continuing thereafter without substantial variation until 1939, when the average was 59.8. On the Salt Lake Division the corresponding figures were: 1920, 45.0; 1922, 52.0; 1925, 62.4; 1930, 78.1; and 1939, 85.4.

It appears from the foregoing that during the years since 1925, defendant has followed, and now follows the practice of operating a substantial number of long trains upon its lines in Nevada and Utah, the proportion of such trains to all trains operated for the year 1939 having been stated in subparagraph VII (b) (1) of these findings. The continuance of said practice of long-train operation is shown by the upward trend in the average number of cars per freight train in said territory; and said practice has caused the number of freight-train units operated by defendant in the same territory to be relatively reduced in proportion to the total amount of freight traffic handled. Thus, in Nevada during the four years 1922-1925, inclusive, defendant produced 420,672,972 car miles (excluding caboose car miles), and in so doing operated a total of 7,923,768 train miles; whereas in the four years 1936-1939, defendant produced in said state 564,256,341 car miles (excluding caboose car miles), but in so doing operated only 7,397,062 train miles. By comparison, in the years 1922-1925, inclusive, defendant produced in the state of Arizona 378,372,269 car miles (excluding caboose car miles), and operated 6,952,701 train miles in so doing; and in the four years 1936-1939 produced 543,210,212 car miles (excluding caboose car miles), and operated 10,086,237 train miles in so doing.

By reason of the initiation and continuance of the long-train program in Nevada and Utah, defendant has been enabled, during recent years, and particularly since 1930, to handle the interstate freight traffic moving over its lines [fol. 6120] in said territory with a substantially less number of trains, both in aggregate total and as related to the volume

of traffic so handled, than in the years prior to the development and commencement of said program.

The restriction of the law has prevented any similar improvement in the affected territory; on the contrary it has compelled defendant to produce a substantially greater number of train miles than would have been required if long-train operation had been developed there to the same or a similar extent as in Nevada and Utah. Thus, in the years 1925-1939, inclusive, defendant actually produced on the Tucson Division 25,661,903 train miles; whereas, if defendant had disregarded the train limit law, and had obtained thereby the same average train lengths as prevailed on the Salt Lake Division in the same fifteen-year period; it could and would have handled the same volume of traffic, measured in car miles, with 19,337,070 train miles. Defendant was thus compelled by the law to produce in said fifteen-year period 6,324,833 excess train miles, or 32.7 per cent more, than were or would have been necessary if the law had not been observed. In 1938, 564,717 excess train miles, or 37.7 per cent, were thus produced.

Long-train operation of the same character and extent as in Nevada and Utah is entirely feasible upon defendant's lines in Arizona, subject only to the construction (as hereinafter described in detail) of certain additional facilities, and the assignment of more powerful locomotives designed to haul heavier and longer trains. Defendant is fully able and intends at once, if the law's restrictions are removed, to make such changes and provided such locomotives, and thereupon and thereafter to operate long trains in the affected territory, in the same manner as in Nevada, and elsewhere upon its system generally.

[fol. 6121] In 1912, as heretofore stated, comparatively few of the sidings or passing tracks on defendant's lines in Arizona had a capacity of more than about 70 cars, inclusive of engine and caboose; so that the enactment of the train-limit law in that year did not cause defendant to reduce the lengths of its freight and passenger trains then being operated in Arizona to any substantial extent, or otherwise compel changes in defendant's operating methods. Rather, said law then imposed upon defendant, and upon its operations, a continuing and permanent restraint, which ever since 1912 has been effective, against further progress and development in the direction of the increased safety,

efficiency, and economy which, as stated at various places in these findings, are and have been realized through the adoption and continuance of the long-train program upon other portions of defendant's system, and by the United States railroads generally.

Masson, R. 1947-1954; Dyer, R. 2000-2003, 2016-2017, 2021-2022; Herbert, R. 2442-2445, 2454-2457; Sines, R. 2459-2474, 3149-3154, 3375-3376.

Exhibits 5, 6, 7, 149, 150, 180, 181, 182, 183, 212.

(c) Reductions in Schedules of Freight Trains.

In handling the through freight traffic, both eastbound and westbound, which moves over its lines in the affected territory, defendant, in conjunction with its connections at El Paso and Tucumcari, and beyond, maintains and for many years last past has maintained time schedules covering the handling and delivery of such freight.

The eastbound perishable and other freight from California points (other than from the Imperial Valley) is concentrated at Colton, and there placed in the trains for eastward movement. At that point the cars containing perishable and similar freight are usually segregated into [fol. 6122] so-called "Fruit Blocks", which contain from 10 to 100 cars; such blocks are identified by letter and number, and each carries its identification throughout its eastward movement. An eastward train operated in the affected territory, if it includes a fruit block or a part thereof in its consist, is usually identified by the block number.

Perishable freight from the Imperial Valley, and from Yuma and vicinity is concentrated at Yuma, and there made up into blocks and trains; such freight when originating in the Salt River Valley, Arizona, is concentrated at Phoenix. The handling of the Yuma (Y) and Phoenix (A) blocks is in all respects similar to that accorded to the Colton (C) blocks as hereinafter described, except that the overall schedules to eastern destinations are shorter, because of the shorter distances, and also that the departure and "run-off" times for Yuma and Phoenix blocks are somewhat different.

The schedules governing the handling of eastbound perishable blocks are and have been based upon a specified basic departure time at Colton (at present, 3:00 a. m. of the day following loading), from which is computed a specified maximum time en route to Chicago, Illinois, and corre-

sponding times to other large eastern markets; but since several such eastward trains ordinarily leave Colton in the course of a day, and all such trains cannot leave at precisely the same time, the times en route of the fruit blocks which leave after the basic departure hour are shortened, and all such blocks are so handled as to arrive at the Chicago market (or other eastern markets) upon an equality; i. e., trains leaving after 3:00 a. m. (and up to 7:00 p. m.) are operated so as to make up, or "run off", the interval prior to their departure, such interval (up to a present maximum of 16 hours) being known as "run-off time".

[fol. 6123] The schedules participated in by defendant and its connections obligate those carriers to make delivery of the freight handled thereunder at the specified schedule times, under penalty of loss-and-damage claim payments for spoilage or loss of market; and by agreements between the participating carriers, such schedules further obligate defendant to make delivery of freight handled thereunder, to its connections at El Paso and Tucumcari, at definite times determined according to the departure hour at Colton.

The schedules governing the handling of westward traffic over the lines in the affected territory, also maintained by defendant in conjunction with said connections, provide and have provided for definite maximum times en route from Chicago to Los Angeles, with corresponding times from and to other related points. A certain specified proportion of said total time is and has been assigned to the district between El Paso and Yuma. Westward trains handling freight moving under such schedules are usually identified by letter symbols: e. g., the SSW trains (Sunset West), and the GBW trains (Gold Ball West).

Schedules similar to the foregoing are and have been maintained covering the eastward and westward transportation of freight moving to and from points in Arizona.

Contemporaneously with the adoption and development of the long-train program, upon its lines generally, other than the lines in the affected territory, and largely as a result of said long-train program (in that the reduction in the relative number of train units has caused the number of train meets and passings, and other interferences with operation, to be reduced in even greater proportion, and has greatly simplified operations in other ways), defendant and its connections have made several successive reductions [fol. 6124] in the time schedules above referred to; and

in connection therewith defendant has materially shortened the average time, both in intermediate terminals and en route, of the identified trains handling freight under said schedules. Prior to the year 1921 the over-all schedule time for perishable freight, from departure time at Colton to delivery at Chicago, was 189 hours; and there was no provision for run-off time; i. e., the schedule merely contemplated not more than 189 hours' total time in transit. In 1921, the over-all time was reduced to 154 hours, with no provision for run-off. In 1924 said over-all time was reduced, in effect, by including a provision for run-off time not exceeding 3 hours. The result was to reduce the actual elapsed time from Colton departure to arrival at Chicago, to not more than 151 hours. In 1927 the run-off time was increased to 7 hours, thus reducing the net elapsed time to 147 hours.

In 1929 a further reduction was made to 146 hours, the basic departure hour at Colton being 3:00 a. m., but the schedule also continued to provide for 7 hours run-off. Thus the actual scheduled elapsed time to Chicago, based upon 10:00 a. m. departure at Colton, became 139 hours. In 1932, the run-off time was increased to 16 hours, thus reducing the elapsed time to 130 hours. In 1940 a further reduction was made, to the present over-all schedule of 139 hours and 30 minutes, with 16 hours run-off, or a net elapsed time of 123 hours and 30 minutes from departure at Colton.

Each of these reductions in over-all time has been accompanied by a corresponding reduction in the proportion of the time assigned between Yuma and El Paso.

In 1932 the producing area in California, to which defendant and its connections apply and have throughout the period [fol. 6125] since 1926 applied the eastbound schedules above referred to, was substantially enlarged; the effect of such enlargement was to reduce, as to the additional points included, the actual times in transit from points of production to points of final delivery in the east. Recently a further reduction in elapsed time has been made, in that shippers who pre-cool their perishable shipments are not required to release such shipments until 5:00 a. m. on the day following loading, in order to obtain movement on the schedule of that day.

The schedule times applying to the handling of perishable freight originating in the Imperial Valley of California and in Arizona, and handled in the "Y" blocks from Yuma and

the "A" blocks from Phoenix, have also been reduced, in the same degree and at or about the same dates as the schedules from Colton.

The aforesaid westbound schedules applying from Chicago and other related points, to Los Angeles and other Pacific Coast points, over the lines in the affected territory, have also been reduced from time to time; and defendant's proportion of such schedule times, allotted to the El Paso-Yuma district, has been correspondingly reduced, as follows:

From 226 hours, in 1920, to 198 hours and 25 minutes, in 1926; 162 hours, in 1928; 137 hours and 45 minutes, in 1929; 134 hours and 15 minutes, in 1934; 134 hours in April, 1935; 110 hours, in November, 1935; and finally to the present schedule, established in 1939, which provides for 109 hours en route from Chicago, or sixth-morning delivery at Los Angeles.

Perishable shipments from northern California, moving over the Nevada-Utah lines of defendant, are concentrated at Roseville, California; and defendant, with its connections, maintains, and in the past has maintained, both eastbound schedules from Roseville to Chicago and [fol. 6126] related points; and westbound schedules from such points to San Francisco, via said Utah-Nevada line, equivalent to the east- and westbound schedules from and to California points via the Arizona lines, as above set forth.

Such schedules have also been reduced in the past, upon dates and to an extent corresponding to reductions made in the schedules applying via the Arizona lines.

Despite the aforesaid schedule reductions, with the consequent higher speeds and greater difficulty in maintaining on-time performance, such performance has, in the main, been highly satisfactory. In 1939, 1261 out of 1528 identified Colton fruit blocks, or 82.5 per cent, arrived at El Paso upon or ahead of schedule, and 758 out of 800, or 94.8 per cent, of the Colton fruit blocks operated into Tucumcari in said year arrived upon or ahead of schedule. On the Nevada route, in the same year, 1428 out of 1608 Roseville fruit blocks, or 88.8 per cent, arrived in Ogden upon or ahead of schedule. In the same year, 1078 out of 1189 manifest sections operated westward over the Arizona lines, into Los Angeles, or 90.7 per cent, made their schedule arrival times; while 668 out of 700 identified manifest sections operated as the "CS" (California Special) out of Ogden westward

to San Francisco, or 95.4 per cent, made their schedule arrival times at San Francisco.

Sines, R. 63-64; *Parmelee*, R. 287; *Kirk*, R. 406-414; *Young*, R. 493-494; *Fertig*, R. 866-883; *Green*, R. 930-947; *Kraemer*, R. 974-978, 987-989; *Randall*, R. 1029-1040; *Hammond*, R. 1173-1175, 1191-1196; *Warfel*, R. 1235-1236, 1239-1242, 1372; *Peckempaugh*, R. 1334-1337; *Mahoney*, R. 1858-1871, 1841-1844, 1977-1981, 1990-1992; *G. C. Baker*, R. 2340-2377, 2386-2393, 2715-2722.

Exhibits 175, 176.

[fol. 6127] (d) Effect of the Long-Train Program Upon the Efficiency and Economy of Defendant's Train Operations

(1) As to the system generally.

During the aforesaid period of steadily increasing long-train operations upon defendant's system (other than in Arizona and adjoining territory) there has also occurred, as a direct result of said long-train program (and in spite of defendant's inability to carry out said program fully, because of the restrictions of the Arizona Train-Limit Law), a substantial and continuous improvement in the efficiency and economy of defendant's freight-train operations. This improvement was particularly marked during the period between 1924 and 1932, the period of most intensive development of the long-train program. Such improvement has been and is evidenced by a number of important and generally recognized indices of efficiency and economy of operation, which include, among others, the following: Average speeds of freight trains, measured in miles per hour; average gross-ton miles made, per freight-train hour; average net-ton miles made, per freight-train hour; average gross-ton miles per ton of fuel consumed, in operation of freight trains; average cost per thousand revenue-ton miles, for all operating expenses, and for transportation expenses only; average freight revenue per freight-train mile; average cost per thousand gross-ton miles, for certain selected direct operating expenses; average pounds of fuel consumed per thousand gross-ton miles.

The average train speed (meaning the average speed, measured in miles per hour, of the trains, while on the road between terminals, the times at stops between terminals being included, but not the times consumed at terminals) of

all main-line freight trains operated on defendant's system increased from 11.2 miles per hour in 1922, a year of pre-[fol. 6128] dominating short-train operation, to 16.5 miles per hour in 1932, and to 17.8 miles per hour in 1939; an improvement, contrasting 1939 with 1922, of 58.9 per cent.

The average gross-ton miles made per freight-train hour (meaning the total weight of the cars and their contents, not including any of the weights of locomotives, multiplied by the miles over which such weight was moved, the latter figure being then divided by the number of hours during which the freight trains handling the traffic were in operation), made by main-line freight trains on the system, increased from 20,727 in 1923, to 34,005 in 1932, and to 41,886 in 1939; an improvement, contrasting 1939 with 1923, of 102.1 per cent.

The average net-ton miles per freight-train hour (meaning the total weight of the contents of the cars only, not including any of the weights of the locomotives or of the cars themselves, multiplied by the miles over which such weight was moved, the latter figure being then divided by the number of hours during which the freight trains handling such traffic were in operation) made by all freight trains, both main and branch lines, on the system, increased from 7,258 in 1922 to 8,775 in 1932 and to 12,490 in 1939; an improvement, contrasting 1939 with 1922, of 72.1 per cent.

The average gross-ton miles per ton of fuel (meaning the quotient obtained by dividing the total amount of fuel consumed by locomotives handling freight trains, measured in units equivalent to pounds of coal, into the figure obtained by multiplying the total gross weight, including the weight of locomotives, handled in such trains, measured in thousands of tons, by the total number of miles over which the tonnage was moved), for all freight trains (both main and branch line) on the system, increased from 11,405 [fol. 6129] in 1922, to 15,395 in 1932, and to 17,318 in 1939; an improvement, contrasting 1939 with 1922, of 51.8 per cent.

The average cost per thousand revenue-ton miles, for all operating expenses, for freight-train operations on the system (meaning the figure in cents obtained by dividing, into the total operating expense of freight-train operations, the figure obtained by multiplying the total number of revenue tons of freight handled by defendant, by the miles over which such freight was moved), declined from \$11.10 in

1922, to \$8.45 in 1932, and to \$7.05 in 1939; an improvement contrasting 1939 with 1922, of 36.5 per cent; and from an average of \$9.94 for the four years 1922-1925 (all of which were years of predominant short-train operation) to an average of \$7.15 for the four years 1936-1939 (which were years of general long-train operation): an improvement of 28.1 per cent.

The average cost per thousand revenue-ton miles, for transportation expenses only, for freight-train operations on the system (said expenses including no costs incurred for maintenance of way, or general overhead, but only those expenses directly incurred in operation of trains), declined from \$5.47 in 1922, to \$4.34 in 1932, and to \$3.82 in 1939: an improvement, contrasting 1939 with 1922, of 43.2 per cent; and from an average of \$5.03 for the four years 1922-1925, to an average of \$3.95 for the four years 1936-1939: an improvement of 21.5 per cent.

In making comparisons of the direct cost of operations for different periods, for the system, or as between different portions of the system, defendant regularly compiles certain selected direct operating expenses, covering costs of fuel, wages of trainmen and enginemen, engine house expenses, [fol. 6130] other locomotive supplies, and train supplies and expenses. The average cost per thousand gross-ton miles for said expenses (being the quotient obtained by dividing the total weight of the cars and the contents, not including the weight of the locomotives, multiplied by the distance moved, into the total of the freight-train costs covering said selected direct expenses) for all freight trains operated on the system, decreased from 93.4 cents in 1925, to 60.3 cents in 1932, thereafter increasing slightly to 63.6 cents in 1939: an improvement (reduction) of 31.9 per cent, contrasting 1939 with 1924. For the two-year period 1924-1925, the system average cost per thousand gross-ton miles for said expenses was 92.46 cents; for the two-year period 1928-1929, 70.14 cents: an improvement of 24.14 per cent; for the two-year period 1930-1931, the corresponding average cost was 66.6 cents, and for the two-year period 1938-1939, 65.76 cents: an improvement of 1.26 per cent. The combined total improvement for the two series of two-year periods was 25.4 per cent.

The average pounds of fuel consumed per thousand gross-ton miles (being the quotient obtained by dividing the total amount of the fuel consumed by locomotives handling freight

trains measured in units converted to equivalent pounds of coal, by the figure obtained by multiplying the weight of the cars and contents, not including the weight of the locomotives, by the distance over which such weights were moved) for all freight trains, both main and branch lines, on the system, declined from 158 in 1924 to 115 in 1939. The corresponding average figure for the two-year period 1924-1925 was 154.3, which declined to 136.3 for the two-year period 1928-1929: an improvement of 11.67 per cent. For the two-year period 1930-1931, the corresponding average figure was 131.7, which declined to an average of 117.6 for the two-year period 1938-1939: an improvement of 10.71 per cent. [fol. 6131] The combined total improvement for the two series of two-year periods was 22.38 per cent.

Masson, R. 1957-1965, 2185-2195, 2213-2222; *Herbert R.* 2412-2428, 2438-2442, 2449-2452; *Sines, R.* 2528-2540, 3455-3464.

Exhibits 151, 162, 165, 178, 179, 180, 193, 249.

(2) In the Nevada-Utah Territory:

There has been a similar and, in many cases, somewhat greater, improvement in the efficiency and economy of defendant's freight-train operations in Nevada and Utah, as compared to the system generally; and such improvement has likewise taken place coincident with, and as a result of, the development of the long-train program. This improvement is shown by statistics reflecting the results of defendant's operations in Nevada, and upon the Salt Lake Division.

The average speed, in miles per hour, of all main-line freight trains on the Salt Lake Division, increased from 14.7 in 1922, to 19.7 in 1932, and to 21.4 in 1939; an improvement, contrasting 1939 with 1922, of 45.5 per cent.

The average gross-ton miles per freight-train hour made by main-line freight trains on the Salt Lake Division increased from 29,628 in 1923, to 58,669 in 1932, and to 72,955 in 1939; an improvement, contrasting 1939 with 1922, of 146.4 per cent.

The average net tons of freight, per main-line freight train upon the Salt Lake Division, increased from 784 tons in 1923, to 1161 tons in 1939, an improvement of 48.1 per cent.

The average cost per thousand revenue ton-miles, for all operating expenses, for all freight train operations (both main and branch line) within Nevada, declined from \$7.02 [fol. 6132] in 1922 to \$4.37 in 1939, an improvement (reduction) of 37.8 per cent; and from an average of \$6.18 for the four-year period 1922-1925, to an average of \$4.28 for the four-year period 1936-1939; an improvement of 30.7 per cent.

The average cost per thousand revenue ton-miles, for transportation expenses only (i. e., those expenses directly associated with train operation) for all freight train operation within Nevada, declined from \$3.45 in 1922 to \$2.36 in 1939, an improvement of 31.6 per cent; and from an average of \$3.12 for the four-year period 1922-1925, to an average of \$2.36 for the four-year period 1936-1939; an improvement of 24.4 per cent.

The average freight revenue per train mile, for all freight trains on defendant's lines within Nevada, increased from \$8.33 in 1923, to \$10.10 in 1939, an increase of 21.2 per cent, despite a concurrent decrease from \$0.238 to \$0.204, or 14.3 per cent, in freight revenue per loaded freight-car mile, and a similar concurrent decrease from \$12.82 to \$9.68, or 24.5 per cent, in freight revenue per thousand ton miles of freight.

The average cost per thousand gross ton miles for certain selected direct expenses, for all freight trains operated on the Salt Lake Division, decreased from 56.0 cents in 1924, to 35.4 cents in 1939; an improvement of 36.7 per cent. The corresponding figure for the two-year period 1924-1925 was 53.85 cents, which declined to 39.91 cents for the two-year period 1928-1929; an improvement of 25.89 per cent. For the two-year period 1930-1931, the corresponding figure was 37.66 cents, which declined to 36.97 cents for the two-year period 1938-1939; an improvement of 1.83 per cent. The combined total improvement for the two series of two-year periods thus analyzed was 27.72 per cent.

The average pounds of fuel consumed per thousand gross-ton miles, for all freight trains operating on the Salt Lake [fol. 6133] Division, declined from 100 pounds in 1924 to 73 pounds in 1939; an improvement of 27.00 per cent. The corresponding figure for the two-year period 1924-1925 was 96.2, which declined to 83.0 for the two-year period 1928-1929; an improvement of 13.72 per cent. For the two-year period 1930-1931, the average was 84.3 pounds, which

declined to 73.9 pounds for the two-year period 1938-1939; an improvement of 12.34 per cent. The combined total improvement for the two series of two-year periods thus analyzed was 26.06 per cent.

Masson, R. 2213-2222; *Herbert*, R. 2406-2428, 2438-2442, 2449-2453; *Sines*, R. 2528-2540, 3455-3464.

Exhibits 161, 165, 177, 178, 179, 180, 181, 193, 249.

- (3) Defendant's inability to achieve comparable efficiency and economy in the territory affected by the Arizona Train-Limit Law.

As heretofore stated, and solely because of the restrictions imposed by said train-limit law, defendant has never been able to undertake or carry forward any substantial program or practice of long-train operation in Arizona or in the adjacent territory where said law has extra-territorial effect. In consequence of such inability, and notwithstanding (1) the substantial improvements in its road and equipment, heretofore set forth in Findings VI (a) and VI (b), which improvements were comparable to and proportionately as extensive as those made in Nevada and Utah; (2) the employment of identical operating rules and methods, in both Nevada and Arizona, the only essential differences being those necessarily brought about by compliance with the train-limit law; and (3) substantial similarity in the traffic handled, as to both volume and character, and in operating conditions, in both Arizona and Nevada: defendant has not been able to bring about the [fol. 6134] same improvements in the efficiency and economy (or as hereafter shown, the safety) of its train operations in Arizona, or any improvement comparable to that achieved in Nevada and the adjacent territory.

As set forth at length in subparagraph (b) (2) of this finding, the years following 1925, and until and including 1932, were those in which the long-train program had its most rapid development; and therefore comparisons between the indices of efficiency and economy herein mentioned, over that span of years, give the most definite indications of the effects of the adoption of the long-train program, in the Nevada-Utah territory, and upon the system generally, and likewise reflect the results of defendant's inability to adapt and carry out said program in the affected territory.

The average speed, in miles per hour, of all main-line freight trains on the Tucson Division increased from 14.7 in 1922, to 17.8 in 1932, and to 20.7 in 1939. The improvement, as between 1923 and 1939, was 40.8 per cent; whereas the corresponding improvement on the system generally was 58.9 per cent, and on the Salt Lake Division 45.5 per cent. As between 1922 and 1932, the improvement on the Tucson Division was 21.1 per cent; as compared with an improvement of 34.0 per cent, over the same span of years, on the Salt Lake Division, and of 47.3 per cent on the system generally.

The average gross-ton miles per freight-train hour, made by main-line freight trains on the Tucson Division, increased from 30,665, in 1923, to 38,787 in 1932, and 47,680 in 1939. The improvement, as between 1923 and 1939, was 55.5 per cent; whereas over the same span of years, the corresponding improvement on the system was 102.1 per cent, and on the Salt Lake Division, 146.4 per cent. Comparing 1932 with 1923, the improvement on the Tucson [fol. 6135] Division was 26.7 per cent, whereas the corresponding improvement on the system was 15.8 per cent, and on the Salt Lake Division 98.0 per cent. Comparing 1939 with 1930, the average gross-ton miles per freight-train hour, for all trains, both main and branch line, on the Tucson Division, increased from 36,175, in 1930, to 45,026, in 1939, an improvement of 24.5 per cent. The corresponding improvement on the system was 32.2 per cent; and on the Salt Lake Division, 41.8 per cent.

The average net tons of freight per main-line freight train on the Tucson Division decreased from 758 in 1923, to 575 in 1932, and then increased to 712 in 1939. There was a decrease of 6.1 per cent, comparing 1939 with 1923; whereas the corresponding figures over the same span of years showed, for the system, an improvement (increase) of 10.6 per cent, and for the Salt Lake Division, an improvement of 48.1 per cent. Comparing 1932 with 1923, the decrease on the Tucson Division was 24.1 per cent; there was a decrease of 13.9 per cent on the system generally, but an increase of 9.9 per cent on the Salt Lake Division, in the corresponding figures, over the same span of years. Comparing 1939 with 1932, the corresponding figures show an increase, on the Tucson Division, amounting to 23.8 per cent, whereas on the system generally, the

improvement was 28.4 per cent, and on the Salt Lake Division, 33.4 per cent.

The average cost per thousand revenue ton-miles, for all operating expenses, for all freight-train operations within Arizona, declined from \$8.24 in 1922 to \$7.26 in 1932, an improvement of 11.9 per cent, and to \$6.12 in 1939, an improvement of 25.7 per cent, comparing 1939 with 1922. The corresponding improvement on the system, as between 1922 and 1932, was 30.0 per cent, and as between 1922 and 1939, 36.5 per cent; in Nevada, between 1922 and [fol. 6136] 1932, the corresponding improvement was 36.5 per cent, and between 1922 and 1939, 37.8 per cent. For the four-year period 1922-1925, the corresponding average cost per thousand revenue ton-miles in Arizona was \$7.42, which declined to \$5.97 for the four-year period 1936-1939, an improvement of 19.5 per cent. The corresponding improvement, over the same span of years, for the system generally, was 28.1 per cent, and for defendant's lines in Nevada, 30.7 per cent.

The average cost per thousand revenue ton miles, for transportation expenses only, for all freight-train operations in Arizona, both main and branch line, increased from \$3.23 in 1922 to \$3.40 in 1932, and then declined to \$2.95 in 1939, an increase of 5.3 per cent, comparing 1932 with 1922, and an improvement of 8.7 per cent, comparing 1939 with 1922. The corresponding improvement on the system, comparing 1932 with 1922, was 20.7 per cent, and comparing 1939 with 1922, 30.2 per cent. In Nevada the corresponding improvement, comparing 1932 with 1922, was 34.5 per cent, and comparing 1939 with 1922, was 31.6 per cent. For the four-year period 1922-1925, the same index for Arizona showed an average of \$3.22, which declined to an average of \$3.00 for the four-year period 1936-1939, an improvement of 6.8 per cent. The corresponding improvement on the system generally was 21.5, and for Nevada, 24.4 per cent.

As heretofore found, the boundaries of the Tucson Division were changed in July, 1930, by the addition of the main line between Tucson and Lordsburg, and the branch line between Bowie and Live Oak via Globe and Miami; and in November, 1929, the boundaries of the Salt Lake Division were changed by the addition of the main line between Wendel and Alturas, California, at which time the

former branch line between Fernley, Nevada, and Wendel, was reclassified as main line. These changes of divisional [fol. 6137] limits do not affect any of the comparisons herein set forth, as between the States of Nevada and Arizona, or for the system. In so far as direct comparisons between the two divisions are concerned, the effects of the changes are largely inconsequential, and can be and are entirely eliminated by making comparisons between the divisions by groups and series of years, in the manner hereinafter set forth.

Thus, the average cost per thousand gross-ton miles for certain "selected" direct expenses (as heretofore specified) for all freight trains on the Tucson Division, declined from 62.88 cents for the two-year period 1924-1925, to 50.80 cents for the two-year period 1928-1929: an improvement of 19.21 per cent. The corresponding figure for the two-year period 1930-1931 was 53.63 cents, which increased to 55.39 cents, for the two-year period 1938-1939: an increase of 3.28 per cent. The combined net improvement (decrease) for the two series of two-year periods thus analyzed was 15.93 per cent. The corresponding improvement, over the same spans and groupings of years, was 25.4 per cent for the system, and 27.72 per cent for the Salt Lake Division. The years 1924-1925, thus grouped together for the purposes of this and similar comparisons, are immediately prior to the general adoption of the long-train program; and the comparison with the two years 1928-1929 produces the percentage of change taking place up to but not including the years in which the changes in the divisional boundaries were fully effective. The two years 1930 and 1931 (the figures for 1930 having been restated, so as to reflect for the entire year the operations on the Tucson Division, as if the altered divisional boundaries had prevailed throughout that year) includes the first years after the changes; and a comparison of those two years (1930 and 1931) with the years 1938 and 1939, taken together, [fol. 6138] develops the percentage of change down to the latest years for which complete statistics are available. By adding the percentage of change in the first series to the combined total improvement for the two series of percentage of change in the second series, there is produced a two-year periods. As before stated, this method of comparison automatically eliminates any effect which might follow from the fact that the territorial boundaries of the

two divisions, in the first series of years, are not exactly identical with said divisional boundaries in the later series of years.

The average pounds of fuel consumed per thousand gross-ton miles, for all freight trains, both main and branch, on the Tucson Division, declined from 104.1 pounds, for the two years 1924-1925, to 99.9 pounds for the two-year period 1928-1929, an improvement of 4.03 per cent. The corresponding average, for the two-year period 1930-1931, was 118.7 pounds and for the two-year period 1938-1939, 108.5 pounds, an improvement of 8.59 per cent. The combined total improvement for the two series of two-year periods on the Tucson Division was 12.62 per cent; as compared with an improvement of 22.38 per cent for the system, and of 26.06 per cent for the Salt Lake Division, for the same index, and over the same span and groupings of years.

The gross-ton miles (exclusive of locomotives and tenders) per ton of fuel, for all freight trains, both main and branch, on the Tucson Division, decreased from 18,675 for the year 1930, to 18,590 for the year 1939, a decrease of 0.5 per cent. The corresponding improvement (increase) on the system was 14.2 per cent, and on the Salt Lake Division 15.3 per cent.

Defendant's inability to effect improvements in the efficiency and economy of freight-train operations upon its lines in Arizona, comparable to those achieved upon its [fol. 6139] lines in Nevada and upon its system generally, has been and is largely and directly due to the restrictions upon its operations imposed by the law. The extent of the improvements available, through the adoption of long-train operation in Arizona, is indicated by the analyses and comparisons set forth in subparagraph (d) of this finding. The comparisons made between the results in the years immediately prior to or at the beginning of the adoption of the long-train program on defendant's lines generally, and the results of operations in recent years (i.e., between the results in the years 1922, 1923, 1924 and 1925, on the one hand, and 1938 and 1939, on the other) measure the long-time trends which demonstrate the growth and continuing advantages of such long-train operation. The comparisons between the results of the years immediately following the changes of limits of the Tucson and Salt Lake Divisions, and the results of the operations of more recent years (i.e., of the years 1930 and 1931, on the one hand, and 1938 and

1939, on the other) measure the more recent trends which demonstrate the present and prospective advantages of such long-train operation, and demonstrate as well that the changes in limits of the Tucson and Salt Lake Divisions have not operated and do not operate to impair the propriety of conclusions predicated upon comparisons between the Tucson Division and the system as a whole or other portions thereof, for the years subsequent to 1930. Finally, said comparisons between the results of operation in years immediately prior to or at the beginning of long-train operations on defendant's lines and results for the years at the close of the period of major development of the long-train program (i.e., comparisons between 1922, 1923, 1924 and 1925, on the one hand, and 1930, 1931 and 1932, on the other) show clearly that in the space of a few years the long-train program resulted in substantially greater efficiency and economy upon the system generally, and particularly the lines in Nevada and Utah, whereas no corresponding improvements were possible of achievement in the affected territory.

Masson, R. 1957-1965, 2156-2166, 2182-2222; *Herbert*, R. 2406-2428, 2438-2442, 2449-2459; *Sines*, R. 2528-2540, 3455-3464, 4222-4223.

Exhibits 151, 160, 161, 162, 163, 164, 165, 177, 178, 179, 180, 181, 193, 249.

VIII

Comparison of Defendant's Methods of Operation with Those Followed on United States Railroads Generally

(a) Improvements in Road and Equipment.

The policy undertaken by defendant, since about the year 1922, as heretofore described, of making and continuing to make improvements in its roadway, structures, and equipment, and of maintaining its transportation plant and facilities in the best possible condition of repair, and of expending large sums of money for such purposes, has been and is typical and representative of the policy generally followed by the major railroads of the United States, considered either as units forming a general national transportation system, or as individual and separate carriers.

The Class I railroads of the United States (a Class I railroad being one having annual gross revenue of at least

\$1,000,000; which class thus includes defendant, and its principal connections and competitors) operated 232,026 miles of railroad in 1939, and received total operating revenues in that year amounting to almost four billion dollars. Said Class I railroads have, during said period [fol. 6141] since 1922, built and acquired a great number of new locomotives, of larger sizes than those previously in service, having greater average tractive power per unit, and to a large extent equipped with new and modern devices of the character mentioned in paragraph VI (b) of these findings, designed generally for the safe, efficient, and speedy handling of long trains, both freight and passenger; and said Class I railroads have also, during said period, largely retired and replaced the smaller, older, and less efficient locomotives.

The result is that average tractive power per locomotive, for the locomotives presently in service upon the railroads of the United States, greatly exceeds the average for earlier years. Thus, the average tractive effort per locomotive, for all locomotives in service on the railroads of the United States, was in 1922, 37,441 pounds; in 1939, 50,395 pounds: an improvement of about 34.6 per cent. Between 1924 and 1938 the average tractive power per freight locomotive, for locomotives of Class I railroads only, increased from 46,060 pounds to 55,943 pounds: an improvement of about 21.5 per cent.

Said Class I railroads have also, during said period since 1922, greatly improved their passenger-car and freight-car equipment, both by buying and building or rebuilding new, larger, and stronger cars, and by retiring and replacing the older, smaller, and less efficient cars. In 1922, 68.8 per cent of all of the freight cars in service on the Class I railroads were of steel or steel-underframe construction. In 1938 such cars constituted 95.5 per cent of the total. Those not having steel underframes (i. e., of wooden construction) are no longer used in interchange service. In 1922 the average capacity of the freight cars in service on United States railroads was 43.1 tons; in 1939, 49.7 tons: an improvement of 15.3 per cent.

[fol. 6142] The devices and appliances used upon such passenger and freight cars, including the draft gears and rigging, wheels, brakes and brake appliances, and the other matters referred to in paragraph VI (b) hereof, have been improved, and newer and more modern types of such de-

vices have, to a large and increasing extent, been installed and applied on such cars.

The Association of American Railroads, acting for the carriers as a group, has promulgated a code of rules, which it from time to time amends, specifying the details of the construction and equipment of cars used or usable in interchange service. Observance of these rules is enforced by careful inspections of cars at points of interchange between railroads.

The principal main lines of the United States railroads have been brought to and now are upon substantially the same high standard of construction, maintenance and repair, and adequacy to meet the national transportation demands, which prevail upon the defendant's lines generally and particularly in the affected territory.

Such improvements in road, equipment and plant generally, thus accomplished by the railroad systems of the United States, have been brought about only through the expenditure of enormous sums of money, such expenditures having been made, in many instances, upon express authority of the Interstate Commerce Commission, pursuant to Section 20a of the Interstate Commerce Act.

Said improvements, and the expenditures therefor, were undertaken pursuant to the general program of betterment of the railroad transportation plant of the United States, heretofore referred to, which was formulated and agreed upon in 1923 by the railroads of the United States (including defendant), as members of and constituting the American Railway Association (now succeeded by the Association of American Railroads). Said program, as agreed upon and thereafter carried out, had for its essential purpose the betterment of railroad service, through improvements in the railroad plant designed to promote and permit speedier, safer, more efficient and more economical railroad transportation.

Wright, R. 223-229, 231-237; *Parmelee*, 282-298, 342-374; *Kirk*, R. 418-427, 434-441; *Young*, R. 505-511, 551-552; *Otterback*, R. 575-605, 608-616; *La Fontaine*, R. 652-656, 682, 695-697, 700-702, 712; *Fertig*, R. 858-864; *Green*, R. 919-922, 924-927, 928-930; *Kracmer*, R. 966-973, 985-987; *Randall*, R. 1023-1026, 1028; *Triem*, R. 1095-1097; *Hammond*, R. 1147-1149, 1162-1165; *Warfel*, R. 1211-1212, 1217-1218, 1223-1231, 1245, 1253, 1263, 1359-1362; *Kiley*,

R. 1293-1300, 1302; *Peckenpaugh*, R. 1323-1332; *Parke*, R. 1397-1417, 1418, 1431-1465; *Beale*, R. 1551-1556, 1560-1580; *Blanchard*, R. 1675-1694, 1698-1702; *Thomas*, R. 1713-1715, 1722-1735; *Cartmill*, R. 1769-1776, 1779-1821; *Mahoney*, R. 1847-1856, 1871-1874, 1889-1890; *Browning*, R. 2863-2884; *Judson*, R. 2979-2989, 2998; *Bohastengel*, R. 3078-3142.

Exhibits, 19, 22, 33, 34, 35, 36, 37, 38, 107, 108, 109, 127, 128, 129, 135, 136, 137, 203, 204, 210, 248.

(b) Increased Train Lengths

Various improved methods of operation which were instituted by the United States railroads contemporaneously with the aforesaid 1923 program of betterment, and were largely made possible thereby, included the adoption and development of the practice of "standard long-train operation", heretofore defined. In consequence thereof, the [fol. 6144] average lengths of freight trains on the railroads of the United States have tended to increase continually; thus, the average number of cars per freight train was, in 1922, 38.4; in 1926, 45.2; in 1930, 48.9; in 1934, 46.2; in 1938, 47.7; and in 1939, 49.1. The recession following 1930 was due largely to a substantial falling off in the total traffic volume in the years after 1930.

The practice of standard long-freight and passenger-train operation is today followed, as the customary and ordinary method of operation, upon substantially every major railroad system throughout the United States. Detailed testimony appears in the record covering the methods followed upon railroad systems which reach into every section of the country; which systems, in 1939, operated a total of 125,885 miles of line, or about 54.25 per cent of the mileage of Class I railroads in the United States; and produced, in said year, more than thirteen billion freight train miles, or about 59 per cent of the total produced by all Class I carriers, and more than thirteen and one-half billion revenue passenger miles, or about sixty per cent of the total produced by all Class I carriers.

With respect to freight-train operation, said detailed testimony shows that freight trains ranging in length from 125 cars up to 460 cars are commonly and regularly operated; that on some systems the standard length of through

freight trains is in excess of 100 cars; that on many main-line districts substantially more than half of all the freight trains run, including the local and turn-around or branch-line trains running only short distances on the main line, are longer than 70 cars; that the operation of long freight trains is a regular and daily practice on each and every railroad covered by said testimony, and over practically every section of the main line of each such railroad.

[fol. 6145] With respect to passenger-train operation, said detailed testimony shows that passenger trains containing 17 cars or more are commonly operated by many railroads; that on many main-line districts substantially more than one-third of all the through passenger trains operated consist of more than 14 cars; that the operation of long passenger trains is a regular, common, and daily practice on each and every railroad whose passenger operations were discussed, and on practically every section of the main line of each such railroad.

Upon all of the several railroads to which said detailed showing refers, as well as various others whose methods of operation were the subject of more general testimony, said standard long-train method of freight and passenger-train operation is and for at least ten years last past has been the common, standard, and regular practice. The railroads mentioned include substantially all of defendant's principal competitors, and all or nearly all of its principal connections, and many other lines which participate with defendant in joint through routes between points on the Pacific Coast, on the one hand, and the states and cities upon and east of the Missouri and Mississippi Rivers, on the other.

Wright, R. 245-251, 253-255, 258-259, 263; *Parmelee*, R. 350-352; *Kirk*, R. 383-384, 386-396, 430-432, 435; *Young*, R. 497-504, 514-517, 544-547, 553-554; *LaFountain*, R. 679, 682-684, 688-689, 703-709, 848-852; *Fertig*, R. 901-905, 1069-1070, 1072-1075; *Green*, R. 918-919, 938-948; *Kraemer*, R. 948, 987-989; *Randall*, R. 1017-1018, 1051-1052, 1055-1058, 1102; *Triem*, R. 1111, 1120-1121, 1130-1131; *Hammond*, R. 1183-1185, 1189-1195; *Warfel*, R. 1210, 1250, 1251, 1254-1255; *Kiley*, R. 1315, 1541; *Peckcupugh*, R. 1350-1354, 1366; *Parke*, R. 1415, 1435; [fol. 6146] 1436, 1454; *Beale*, R. 1561-1581, 1585.

1639-1642, 1650; *Wilbur*, R. 1601-1606; *Mahoney*, R. 1846, 1874-1887, 1890-1902, 1906-1907, 1966-1974, 1989-1990, 2^d25; *G. C. Baker*, R. 2358-2360, 2380-2386; *Judson*, R. 2978, 2998, 3001-3008; *Sines*, R. 3450-3454.

Exhibits 12, 13, 22, 25, 29, 31, 43, 44, 45, 47, 49, 52, 56, 60, 64, 68, 73, 74, 75, 76, 79, 81, 82, 83, 84, 87, 89, 90, 91, 92, 95, 97, 98, 100, 101, 103, 117, 118, 119, 121, 121, 138, 139, 192, 248.

(c) Improved Schedules and Performance

The handling of through freight traffic upon published and agreed time schedules, conforming in general character to the schedules maintained by defendant and its connections, described at length in paragraph VII (c) of these findings, is a general practice of the major railroads of the United States. Freight is transported between all parts of the nation under said schedules, which frequently are participated in by three or more carriers. The institution and maintenance of such schedules has been and is an essential part of an organized and coordinated effort of the country's railroads, directed toward the continuing improvement of service, which had its inception in the afore-said 1923 program of betterment; and a direct result of the improved operating methods, including particularly the operation of standard long trains, made possible thereby. As improvements in road, equipment, and operating methods became more widespread upon the railroads of the United States during the years following 1923, improvements in and reductions of schedules became possible, and were made. Illustrative of such schedules, and said reductions and improvements therein, are those participated in by defendant and its connections, covering the transportation of through freight eastward and westward between Pacific Coast points, on the one hand, and Chicago, Illinois, and related points, on the other.

The record indicates that freight handled under schedules is transported in accordance therewith, and delivered at destination, upon or in advance of schedule time, in more than 95 per cent of all cases.

Wright, R. 229-230; *Parmelee*, R. 348-354; *Kirk*, R. 406-414, 433-434, 439-440; *Young*, R. 493-499, 502-503; *LaFontaine*, R. 656-658, 840-848; *Fertig*, R.

866-884; *Green*, R. 930-946; *Kraemer*, R. 974-978, 987-989; *Randall*, R. 1029-1040; *Triem*, R. 1108; *Hammond*, R. 1172-1175, 1191-1196; *Warfel*, R. 1235-1236, 1239-1242, 1362, 1374; *Kiley*, R. 1304-1305; *Peckenpawgh*, R. 1334-1337; *Mahoney*, R. 1841-1844, 1858-1863, 1866-1871, 1977-1981, 1990-1992; *Judson*, R. 2991-2992; *F. P. McDonald*, R. 2971; *Sines*, R. 63-64; *G. C. Baker*, R. 2340-2377, 2386-2393, 2715-2722.

Exhibits 22, 175, 176.

(d) Increased Efficiency and Economy

During the period since 1923, and coincident with the substantial increase in train lengths during that period, there has been a marked improvement in the efficiency and economy of operations upon the railroads of the United States generally. This improvement is comparable to that achieved upon defendant's system, other than upon the lines in the affected territory, and particularly the increased efficiency and economy achieved in Nevada and Utah, as more fully set forth in paragraph VII (d) of these findings. Such improvement, as to the railroads of the United States [fol. 6148] as a whole, has been and is a direct result of the aforesaid 1923 program of betterment, and the development and accomplishment thereof in the succeeding years, and of the improved operating methods, particularly the practice of standard long-train operation, which were adopted and developed throughout the years following 1923.

Said improvement in efficiency and economy is particularly shown by both (1) national statistics, relating to efficiency and economy of operations upon the railroads of the United States as a whole, which statistics present certain of the indices heretofore mentioned; and (2) corresponding statistics, relating to the operations of individual typical railroads.

Thus, referring first to national statistics, the average speed of all freight trains, on all Class I railroads, was, in 1922, 11.1 miles per hour; and said average speed increased steadily through the succeeding years to 16.7 miles per hour in 1939; an improvement of 50.5 per cent. The average amount of freight-train service produced per ton of fuel consumed on freight trains of Class I railroads increased during the same period as follows: from 10,750

gross ton miles per ton of fuel consumed for the year 1922, to 15,528 gross ton miles in 1939. The improvement, contrasting 1939 with 1922, was 44.4 per cent.

The average gross ton miles per train hour, for all freight trains of Class I carriers was, in 1922, 16,188; and said average increased rather steadily year by year to 32,808 in 1939: an improvement of 102.7 per cent.

The average expense, per thousand revenue ton miles, for all freight operating expenses, for all Class I railroads, was, during the four-year period 1922-1925, \$8.71; [fol. 6149] and said average declined rather steadily from year to year, to \$6.49 for the four-year period 1936-1939: an improvement of 25.5 per cent.

The average expense, per thousand revenue ton miles for freight transportation expenses only (as heretofore defined), for all Class I railroads, was, for the four-year period 1922-1925, \$4.16; and declined progressively to \$3.18 for the four-year period 1936-1939: an improvement of 23.6 per cent.

The average expense per passenger-train car mile, for passenger operating expenses, for all Class I railroads, was, for the four-year period 1922-1925, 32.80 cents; and declined to 25.67 cents for the four-year period 1936-1939: an improvement of 21.74 per cent.

The average expense per passenger-train car mile, for passenger transportation expenses, was, for the four-year period 1922-1925, 15.40 cents; and declined to 12.31 cents for the four-year period 1936-1939: an improvement of 20.06 per cent.

The greatly increased efficiency and economy of the operation of the Class I railroads, as a group, is further shown by the fact that in the four-year period 1922-1925 their revenue freight traffic, amounting to 1,554 billion revenue ton miles, was handled with an average annual ownership of 64,792 locomotives and 2,328,741 freight cars; whereas in the four-year period 1936-1939 their revenue freight traffic, amounting to 1,323 billion revenue ton miles was handled with an average annual ownership of 42,885 locomotives and 1,712,936 freight cars; in other words, though the traffic volume was only 15 per cent lighter, it was handled more cheaply, at higher speeds and on faster schedules, and with 34 per cent fewer locomotives and 26 per cent fewer cars.

[fol. 6150] The statistics of record, showing the efficiency and economy achieved by individual carriers (other than defendant) as a result of the long-train practice, relate directly to operations of sixteen important systems: namely, the Chesapeake & Ohio, Boston & Maine, Chicago, Milwaukee, St. Paul & Pacific, Northern Pacific, Missouri Pacific, Erie, Atchison, Topeka & Santa Fe, New York Central, Pennsylvania, Chicago, Burlington & Quincy, Great Northern, Union Pacific, Chicago & Northwestern, Illinois Central, St. Louis Southwestern, and Chicago, Rock Island & Pacific railroads. The lines of these carriers extend into every major territorial subdivision of the country; five of said systems extend from the Pacific Coast to the Mississippi or Missouri Rivers, and each of these transcontinental carriers extends, either with its own lines or those of direct connections, to Chicago, Illinois. Certain of the other lines enumerated are important trunk-line carriers extending from Chicago, or Mississippi River-crossings, to the Atlantic Seaboard. The principal north-and-south lines of the Mississippi Valley are likewise represented.

Each of said carriers follows, and for many years last past has followed the practice of standard long-train operation, except to the extent that the Arizona Train-Limit Law prevents and has prevented the Atchison, Topeka & Santa Fe from so doing, upon that part of its lines located in Arizona and adjacent territory where the law has extra-territorial effect. The improvements in the efficiency and economy of operation achieved by these systems, coincident with and as the result (in part, at least) of the long-train practice adopted by them, are typical of the achievement of efficiency and economy of operation, by the rail-roads of the United States generally, and particularly by defendant, as heretofore shown.

Porter, R. 152-155, 189-198, 210-214; *Wright*, R. 215-216, 260-263; *Parmelee*, R. 298-374, 475-478; *Kirk*, R. 378-379, 439-440; *Young*, R. 486-488; *Otterback*, R. 567-572, 581-610, 619-624; *LaFontaine*, R. 636-638; *Burn*, R. 731-733; *Fertig*, R. 856-857; *Green*, R. 915-916; *Kraemer*, R. 955-958; *Callin*, R. 997; *Randall*, R. 1015-1016; *Triem*, R. 1078-1083; *Harmon*, R. 1139-1140, 1145-1148; *Kiley*, R. 1281-1282; *Peckenpau*, R. 1318-1321; *Beale*, R. 1545-1548; *Wilbur*, R. 1593-1600; *Blanchard*, R. 1657; *J. P.*

McDonald, R. 1739-1746, 1762-1765; *Judson*, R. 2975-2977.

Exhibits 10, 11, 12, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 27, 28, 29, 32, 33, 37, 39, 42, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 58, 59, 60, 62, 63, 64, 66, 67, 68, 77, 78, 79, 85, 86, 87, 93, 94, 95, 99, 102, 103, 116, 120, 121, 124, 130, 131, 248.

(e) Results of the Long-train Program from the Standpoint of the Public, the Employees, and the Railroad Owners.

(1) Reduction in Average Transportation Charges Paid by the Public.

Concurrently with the aforesaid improvements in schedules and performance, and as a direct result of the increased efficiency and economy brought about by the aforesaid 1923 betterment program, including the development and continuation of long-train operations, the rates for freight and passenger transportation paid by the railroad patrons have shown continuously decreasing trends. Thus the average revenue per ton-mile, received by all Class I railways of the United States (which average revenue directly reflects the average level of the freight rates charged to and paid by the public for freight transportation) was in 1922, 1.177 cents, and in 1939, .973 cents: a decrease of 17.4 per cent. Similarly, the average revenue per passenger-mile, received by all Class I railways of the United States (which average figure directly reflects the average levels of fares paid by the public for railroad passenger transportation) was in 1922, 3.027 cents, and in 1939, 1.840 cents: a decrease of 39.2 per cent.

Parmelee, R. 298-304, 332, 336, 339.

Exhibit 16.

(2) Increases in average wages paid to employes.

Except for a temporary recession in the levels of wages, commencing in 1932 and extending until and including 1934 (the wage levels having been entirely restored in 1935), the average rates per hour for wages paid to all railroad employes of Class I railroads in the United States have shown a generally increasing trend since 1922. In that year

the average hourly rate was 63 cents; in 1939, said rate was 74.9 cents: a percentage increase of 22.1 per cent. Dealing particularly with the wage rates of train and engine-service employees (which are the classes of employees who man the trains to which the train-limit law applies), the average wage-rate per hour for such employees was, in 1922, 79.1 cents, and generally tended to increase; except for the aforesaid temporary recession of 1932-1935, up to 92.2 cents per-hour for the year 1939: a percentage increase, comparing 1939 with 1922, of 16.5 per cent.

Parmelee, R. 304-316, 332-336, 339-342.

Exhibits 17-18.

(3) Effect on returns to owners of the railroads.

While the aforesaid 1923 betterment program, as developed and continued through the succeeding years, has [fol 6153] been accomplished by increasing efficiency and economy (and also, as hereinafter shown, safety) of operations, and likewise by benefits to the shipping and traveling public (through the aforesaid reductions in rates and fares) and to the railroad employees (by reason of the aforesaid increases in wages and wage rates, and the improvement in safety), the owners of the railroads have failed to realize any corresponding benefits, in the shape of returns upon the moneys invested in the properties, particularly during the period since 1929.

During the period following the year 1922, and to and including the year 1929, the Class I railroads of the United States, considered as a group, enjoyed a period of relative prosperity, in that the net income from their operations, available for the betterment of the properties and for the payment of dividends upon the capital stock, represented substantial amounts, culminating in a net income of approximately \$897,000,000 for the year 1929. Following the year 1929, said Class I railroads of the United States entered upon a period of severe and continued depression; and the net income declined from said figure of \$897,000,000 for the year 1929, to an actual deficit of \$139,000,000 in the year 1932. The years 1933, 1934 and 1938 were also years in which substantial deficits were experienced. In the year 1935 there was a net income of \$7,500,000; in 1936, \$164,000,000; in 1937, \$98,000,000; and in 1939, \$93,000,000. The rate of return on the prop-

erty investment devoted to carrier purposes, for all Class I railroads as a group, has not in any year since and including 1931 exceeded 2.57 per cent; in the year 1939, such rate of return was 2.25 per cent.

Parmelee, B. 316-325.

Exhibit 19.

[fol. 6154] (f) Similarity of Operating Conditions and Operating Rules on Other Railroads to Those Prevailing upon Defendant's Lines in the Affected Territory.

The operating rules which cover the operations of United States railroads generally, and particularly of those railroads, typical examples of whose operations are separately set forth in the record, are largely modeled upon and in conformity with a standard code of operating rules prepared and promulgated by the Association of American Railroads, and generally used, subject to minor variations because of peculiar or local conditions. The code of operating rules in force on defendant's lines, heretofore mentioned in paragraph VII (a) of these findings, likewise conforms generally to said standard code.

The operating conditions, particularly from the standpoint of maximum and ruling grades, curvature, and distribution of traffic as between through (interstate) and purely local, upon the districts and subdivisions covered by said typical examples of long-train operation are generally similar and, in many instances, closely comparable, to those encountered upon defendant's lines in the affected territory. Said examples include districts where there are single-track, and double-track operations; districts where helper service is used, both regularly and occasionally; districts where the cars moved in one direction are generally loaded, and those in the other direction generally empty; districts where there is a more even balancing of loaded and empty movement in opposite directions; districts where local traffic is negligible, and through traffic is relatively heavy; districts where perishable traffic is handled, in multiple-car units, in heavy volume; districts where operations, and particularly the handling of cars in long trains, must be so conducted as to insure that trains and cars will [fol. 6155] arrive at interchange and gateway points at agreed times; in short, said typical examples cover operations under varied conditions; but each one presents a

situation, the counterpart of which is found, to a greater or less degree, throughout, or at least in some part of, the affected territory.

A further similarity between the operations of the several railroads particularly mentioned in subparagraph (d) of this finding, and those of defendant, both on its system generally and in the affected territory, is found in the fact that perishable commodities, including also live-stock and livestock products, form a substantial proportion of the traffic carried by each such railroad, and likewise, as aforesaid, of the traffic handled by defendant, particularly in interstate commerce in and across the affected territory.

Sines, R. 53-54, 2474-2475; *Porter*, R. 193-195; *Wright*, R. 215-222, 229-230, 238-245, 251-252, 256-259, 264-270; *Kirk*, R. 378-379, 390-397, 399-414, 426, 427-430, 442-445, 450-453; *Young*, R. 487-494, 511-513, 540; *LaFountaine*, R. 635-645, 648-651, 661-662, 671-672, 675-682, 685, 688-690, 692-700, 702, 709-714, 840-848; *Burn*, R. 733-736, 751-752; *Gregory*, R. 747-751; *Oakley*, R. 775-777; *Millard*, R. 789-794; *Snell*, R. 813-815; *Albert*, R. 824-826; *Fertig*, R. 855-857, 881-883, 887-889, 895-905, 1068-1070; *Green*, R. 919, 922-924, 938-940, 942-943, 953, 1154; *Kraemer*, R. 958-966, 968-969, 983, 992-994; *Randall*, R. 1018-1022, 1032-1034, 1036, 1051-1055; *Triem*, R. 1081-1086, 1107-1111, 1116-1120, 1129-1130, 1157; *Hammond*, R. 1139-1140, 1165-1173, 1175-1176, 1185, 1189-1191, 1202-1204; *Warfel*, R. 1205, 1210-1216, 1231-1239, 1243-1249, 1256-1263, 1361-1366, 1368-1370; *Kiley*, R. 1292-1294, 1300-1306, 1313-1314, 1485-1486; *Peckenpaugh*, R. 1319-[fol. 6156] 1322, 1324, 1332-1334, 1342-1343, 1349-1354, 1419-1430; *Beale*, R. 1545, 1548-1550, 1560-1580, 1582-1586, 1639-1651; *Wilbur*, R. 1606-1617; *Blanchard*, R. 1657-1677, 1700-1705; *Thomas*, R. 1713-1715, 1722-1735; *McDonald*, R. 1747-1759, 1760-1761, 1765; *Mahoney*, R. 1856-1858, 1863-1865, 1874-1885, 1887-1888, 1903-1909, 1981-1985; *Browning*, R. 2863-2884; *Judson*, R. 2979, 2989-2991, 2996, 3005-3007, 3052-3056.

Exhibits 10, 23, 26, 27, 30, 42, 43, 50, 53, 55, 57, 58, 61, 62, 65, 66, 69, 71, 73, 77, 80, 85, 88, 93, 96, 99,

104, 105, 106, 116, 124, 125, 126, 132, 133, 134, 140,
152, 184, 203, 204.

IX

Recent Long-train Operations of Defendant in Arizona: Intention to Undertake Future Long-train Operations.

(a) Long-train Operations of Defendant in Arizona in 1940.

During the period between March 2nd and April 30th, 1940, both dates inclusive, defendant operated in Arizona 62 long passenger trains, including the passenger train particularly referred to in the complaint herein. During the period April 4th to April 30th, 1940, both dates inclusive, defendant also operated in Arizona some 302 or more long freight trains, including the freight train particularly referred to in the complaint. Each of such long trains was operated at the direction, and with the knowledge, of the responsible officers of defendant having immediate supervision over its train operations in Arizona.

The long passenger trains thus operated accumulated 15,857 passenger-train miles and 243,749 passenger-car miles within Arizona. The long freight trains thus operated [fol. 6157] accumulated 37,257 freight-train miles, and 3,180,278 freight-train car miles within Arizona. The average number of freight cars per freight train, for such long trains, was 85.36. The average length of all of the freight trains, including short trains, operated in Arizona during the month of April, 1940, was 57.85 cars.

The long freight-train operation thus undertaken by defendant during April, 1940, was necessarily upon a limited scale; primarily because the defendant did not undertake, for the purposes of such operation, to make any changes in the assignments of locomotives to its lines in the affected territory, or to transfer to said lines, for use in said long-train operation, the larger and more powerful locomotives which are and would be more appropriate thereto; and also because the great majority of the passing sidings and yard tracks in the affected territory, particularly in the districts west of Lordsburg, do not readily accommodate trains of substantially more than 70 cars, including engine and caboose. For these reasons the aforesaid long freight-train operation was largely confined to the handling

of long trains in the westward direction only; although at different times, during said period, long trains were also operated eastward.

Stipulation of Counsel, R. 30.

Sines, R. 3356-3380; 3427-3431.

Exhibits 234, 235, 246, 295.

(b) Future Long-train Operations Contemplated by Defendant: Changes in Plant and Equipment.

As heretofore stated, defendant plans and intends, when and if the restrictions of the train-limit law are removed, to begin at once the operation of a substantial number of long freight and passenger trains in the affected territory. Initially, and primarily because of the limited lengths of [fol. 6158] many of the sidings in the affected territory, such long freight-train operation will be generally confined to the handling of trains of more than 70 cars in one direction only, at one time. Eventually, and as rapidly as the necessary extensions of siding lengths and other changes in plant and equipment hereinafter mentioned can be made, such long-train operation would and will be expanded and extended until, upon substantially the same scale as presently followed in Nevada and other portions of defendant's system where, as elsewhere stated in these findings, long-train operations prevail.

In order to operate long freight trains freely in both directions in the affected territory, it will be necessary for defendant, and defendant now plans and intends, to build, or extend, yard tracks and sidings at 49 stations (including terminals) in said territory, so as to provide trackage permitting the operation of trains of 100 cars eastward and 125 cars westward as a general practice. The capital cost of such track construction and extensions is \$685,985; the annual interest and maintenance charge thereon amounts to \$40,009. Defendant also plans and intends, in order to provide the necessary servicing and repair facilities for the larger locomotives (as hereinafter mentioned) to be employed in such long freight-train operation, to reconstruct certain of its present roundhouse and turntable facilities at Tucson and Yuma, and to provide additional repair facilities at El Paso, and additional water-supply facilities at Benson. The aggregate capital expenditure for these purposes amounts to \$453,832, involving an annual interest and maintenance charge of \$28,137.

In order to conduct long freight-train operations in the affected territory with greater efficiency and economy, and [fol. 6159] with due regard for schedule requirements, and to realize thereby a larger degree of use and usefulness of its entire railroad plant in said territory, defendant plans and intends to provide and assign to such freight-train operation an adequate number of locomotives having sufficient tractive power more readily to handle long freight trains in both directions in said territory. Such locomotives, when so assigned, will replace certain of the other locomotives now in use in said territory. Of all of the types of locomotives owned and operated by defendant, the Articulated-Consolidation type is most suitable to such long-train operation. Locomotives of class 8 of the Articulated-Consolidation type, for brevity known as AC-8 locomotives, have been in service on various portions of defendant's lines since 1939. An earlier class of the same type, known as the AC-6 locomotive, which closely resembles the AC-8 in all essential features, has also been used by defendant on various portions of the system since about the year 1930. In order to handle, in long-train operation, the same volume of freight traffic actually handled in the affected territory in 1938, defendant will be required to assign some thirty AC-8 locomotives to said service. Fifty-one of the various types and classes of locomotives presently assigned to the affected territory will thereby be displaced, and made available for use elsewhere upon defendant's system. The net increase in the gross weight of the locomotives assigned to the affected territory brought about by such replacement, amounts to 1,141,160 pounds; so that the net capital cost to defendant of such locomotive reassignment, based upon the current price of 24.9 cents per pound for locomotives purchased by defendant in 1939, amounts to \$284,149. The annual interest and depreciation charge associated with said capital cost is \$19,606.

[fol. 6160] Long freight-train operation in the affected territory, would and will bring about a reduction in the number of such trains operated, in relation to the traffic moved; as a result of which defendant would and will be able to conduct freight-train operations in the affected territory (if the total volume of such freight traffic were no greater than in 1938) with 21 fewer cabooses. These 21 surplus cabooses represent a capital investment of \$71,694;

and an annual charge for interest, depreciation, and maintenance, amounting to \$8747. Defendant would and will be relieved of said capital investment, and the corresponding annual charge thereon, as represented by said surplus cabooses, if and when the restrictions of the law are removed.

Dyer, R. 2021-2022; *Sines*, R. 2569-2572, 3259-3280, 4129-4137, 4161-4163, 4226-4227; *Herbert*, R. 2839-2856, 2886-2893; *Russell*, R. 120.

Exhibits 197, 202, 205, 222, 223, 224, 225.

X

Effect of the Train-limit Law upon Defendant's Operations.

(a). The Redispatching Studies.

In order to determine as precisely as possible the effect of the train-limit law upon its operations, defendant conducted a series of detailed studies of the trains and the traffic handled over its lines in the affected territory, during various recent periods, as follows:

1. The freight trains and traffic handled between Yuma and El Paso during the months of June and August, 1938;

2. The passenger trains and traffic handled between Los Angeles and El Paso during the entire year 1938;

[fol. 6161] 3. The freight trains and traffic handled over the lines between Phoenix and Picacho, including the movement of such traffic between Picacho and Tucson, during the month of December, 1938;

4. The freight trains and traffic handled between Yuma and El Paso during the period April 4th to April 30th, 1940, both dates inclusive.

These several studies are hereinafter referred to for convenience as the "redispatching studies".

The redispatching study of June and August 1938, first above referred to, involved a close and detailed analysis of each of the freight trains actually operated by defendant over the lines between Yuma and Tucson, via Gila, and between Tucson and El Paso, via both Lordsburg and Douglas, as to consist, speed, and other essential features.

of operation; and the complete rearrangement, into "re-dispatched" trains, of the cars and traffic thus actually moved, so as to conform the operations, for the purposes of the study, to the conditions which would prevail if the law were wholly set aside. Said months of June and August, 1938, were and are representative of the entire year, in that June was the month of heaviest traffic volume, and August the month of lightest traffic volume; while the volume of the traffic handled over the lines studied, in the two months taken together, constituted slightly more than one-sixth (17.89 per cent) of the total so handled for the entire year.

In the conduct of said study it was contemplated, for the purposes thereof, that all of the conditions which actually prevailed on said lines during the two months mentioned would have continued to prevail; except to the extent [fol. 6162] that the removal of the limitations imposed by the law would have permitted modifications in defendant's operating methods, and would have warranted certain changes in its equipment and facilities (substantially as set forth in finding IX-b, *supra*), particularly: (i) the substitution of more powerful locomotives for those actually in use, (ii) necessary changes in and additions to locomotive roundhouse and shop facilities, and (iii) increases in the capacities, measured in numbers of cars, of sidings at certain specified meeting and passing points upon the lines involved.

Said 1938 redispatching study was carefully conducted, expressly for the purposes of the present case, under the direct, personal, supervision of experienced and fully qualified operating and executive officers of defendant, by the chief train dispatchers, who now and for many years last past have supervised the operation and movement of defendant's trains in the affected territory. The results thereof present as precise and accurate a determination as possible of the effects of the law: (1) in requiring additional train service to be operated by defendant in the affected territory; (2) in creating or aggravating delays to and interference with defendant's trains and cars, and the traffic transported therein; and (3) in imposing additional expenses upon defendant's operations in said affected territory.

The passenger redispatching study for the year 1938, second above referred to, was conducted in substantially

the same manner, and by the same persons, as the freight redispatching study for the months of June and August, 1938; however, it was unnecessary for the purposes of said study to assume any such changes in locomotive assignments, or in locomotive roundhouse or shop facilities, or in siding capacities, as in the case of the freight-train redispatching study.

[fol. 6163] The redispatching study covering the Phoenix-Tucson operations, for the month of December, 1938, third above referred to, was conducted in the same manner and with the same care as the other studies, all of the work being personally performed by the chief train dispatcher of the Tucson Division. The month of December, 1938, was selected for said study, because that month represents the period of maximum traffic upon the Phoenix-Picacho portion of the line.

Two separate but closely coordinated redispatching studies were actually undertaken in connection with freight-train movements in the affected territory during the period April 4th to April 30th, 1940. During said 27-day period, defendant conducted long-train operations on a limited scale in certain portions of the affected territory, and as stated in finding IX (a), actually operated in Arizona some 302 freight trains containing more than 70 cars, exclusive of caboose. Such operations, though undertaken without regard to the 70-car restriction, were limited in scope, in that they were carried on with the same locomotive theretofore and thereafter in service in the same territory, and without the benefit of any extensions of sidings, as contemplated in the event the law's restrictions should be removed.

The first of the said 1940 redispatching studies contrasted the limited long-train operations thus actually conducted during April, 1940, with operations as they would have been conducted if the 70-car restriction had been fully observed. Defendant was thus able to and did determine the savings in additional train service, in interferences with operations, and in additional and unnecessary expenses, realized as a result of such limited long-train operation.

[fol. 6164] The second of said 1940 redispatching studies contrasted said limited long-train operations with long-train operations as they would have been conducted with the extended sidings, the enlarged roundhouse and shop facilities, and the more powerful locomotives, as contemplated

in connection with said 1938 redispatching study. The two 1940 redispatching studies, taken together, therefore afford a ready and accurate determination of both the economies and advantages immediately available to defendant, if the restriction be removed, and even though defendant might not at once undertake substantial alterations of its present plant and equipment in the affected territory, and also of those economies and advantages capable of being ultimately realized, if and when the law is no longer effective. In those respects said 1940 studies serve to check and confirm the results presented by the 1938 studies.

Sines, R. 2555-2582, 2594-2632, 2654-2669, 2788-2806, 4161-4163, 4224-4226; *Baker*, R. 2697-2705, 2723-2729, 2780-2786, 2894-2918; *Herrell*, R. 2732-2772, 4065-4072; *Cassady*, R. 2812-2830, 4090-4092, 4096-4099; *Reid*, R. 2942-2947, 2950-2952; *Burke*, R. 2958-2959; *F. P. McDonald*, R. 2964-2967, 2972-2974.

Exhibits 196, 197, 198, 199, 226, 315, 316, 317.

(b) Interference With and Delays To Interstate Traffic.

The enforcement of the train-limit law against defendant results and will continue to result in delay to and interference with the handling and movement of defendant's interstate trains, both freight and passenger, operated in the affected territory, and with the transportation and movement of the interstate passengers, cars and commerce contained therein, both within and without the boundaries of Arizona.

[fol. 6165] Such delays and interferences arise and will continue to arise in the following ways: (1) interferences with and delays to cars and trains at terminals, (2) delays to individual cars, as distinguished from trains, at terminals and other stations, and (3) interferences with and delays to trains while on the line between terminals.

(1) Terminal delays.

The terminal delays occasioned by enforcement of the law, and which are directly and solely due thereto, are usually caused by the necessity of: (i) reducing defendant's long trains, as they approach or arrive at the Arizona state boundary lines, to lengths not exceeding 70 cars; (ii) building up said trains, as they are about to leave or after they

have left Arizona, to the normal lengths prevailing in the adjoining states. Such delays occur in part outside of Arizona, and in that respect the law operates with extra-territorial effect.

About 46.6 per cent of the freight trains moving between Indio and Yuma are long trains; the average length of the eastward trains entering Yuma from California being about 87.3 cars, and of the trains moving westward from Yuma into California about 89.7 cars. As the result of observance of the law in connection with all operations east of Yuma, all of defendant's freight trains moving eastward to and through Yuma must either be made up as short trains at points of origin in California, or reconstituted at Yuma or some point west thereof, so that the operation east of Yuma shall conform to the law; and all said trains, when moving westward as short trains into Yuma, must either be reconstituted at Yuma, so as to avoid running them as short trains in California, with resulting added and unnecessary expense, or else operated out of Yuma westward [fol. 6166] as short trains, to be stopped at some point west of Yuma, and there built up into the longer trains permitted in California.

Some 22.34 per cent of defendant's freight trains moving between Lordsburg and El Paso are long trains; and by reason of the observance of said law, said long trains, when moving westward, must be stopped at Lordsburg and there cut down to the length permitted by the law, being then operated as short trains for a distance of some 23 miles in New Mexico before entering Arizona at Cavot. Eastward long trains operating between Lordsburg and El Paso represent short trains which have moved eastward from Arizona and have been stopped at Lordsburg and there built up into long trains as permitted in New Mexico. In many instances, however, and as indicated by the fact that more than 77 per cent of the freight trains between Lordsburg and El Paso are short trains, schedule requirements prevent the stopping of eastward trains or blocks of cars at Lordsburg, or at any other point west of El Paso, for the period necessary for consolidation into longer trains. The law thus operates to control completely the length of defendant's freight trains between Lordsburg and the Arizona-New Mexico boundary line at Cavot; and, as to a large proportion of defendant's eastward trains, the law affects, and largely controls their lengths, not only west of Lords-

burg, but also east thereof, upon defendant's lines in New Mexico and Texas as far east as El Paso. The total distance east of the Arizona boundary where the law thus directly affects train lengths of defendant's freight trains is 171 miles, the distance from Cavot to El Paso.

There are no terminal or other facilities at the exact point where defendant's line crosses the California-Arizona boundary, or at any station immediately west of or closely [fol. 6167] adjacent to said boundary in California, sufficient for the making and breaking up of trains, and storage of cars, all of which operations are necessary if the law is to be complied with literally. Such facilities exist at Yuma; immediately east of the boundary line; but since they are wholly within Arizona, they cannot be used for the purpose of changing from long-train to short-train operation, or the reverse, unless long trains are actually operated into and out of Arizona. In practice, defendant daily operates many long trains into and out of the Yuma terminal, and performs the reconstituting operations with the facilities at said terminal. Plaintiff, through its counsel, has in effect conceded that defendant can, as a practical matter, avoid such operations within Arizona only by causing all its trains between Yuma and the terminals next west of Yuma to be operated as short trains.

There are likewise no terminal or other facilities at or near Cavot (the Arizona-New Mexico boundary), and such facilities could not be constructed at said point except at great expense. The nearest point to said boundary at which the reconstituting and car-storage operations necessary in order to conform to the law can practicably be conducted is Lordsburg, which is 23 miles east of the boundary, and about 148 miles from El Paso. The siding facilities at Lordsburg are fairly adequate for the purpose, and are presently so used. The topography at Cavot is such that even if terminal and storage facilities were constructed there, the operations of changing from long-train to short-train operation, and the reverse, and of storing and setting out cars as required incidental thereto, would be difficult and impracticable, besides involving considerably greater operating expenses, and substantially more delays to trains and cars, than are incurred in the performance of such [fol. 6168] operations at Lordsburg. Moreover, such facilities would be useless for the purpose of reconstituting those eastward freight trains (about 75 per cent of all now oper-

ated) which because of schedule requirements cannot be and are not presently stopped and held for consolidation at Lordsburg.

G. C. Baker, R. 2358-2360, 2380-2382; *Herrell*, R. 2743-2749; *Sines*, R. 3169-3173, 3530-3536, 3828-3839, 4151-4153; *Herbert*, R. 3820-3827.

Exhibits 1, 175, 185, 215, 297.

Yuma delays: All eastward freight trains of defendant entering Arizona stop at Yuma to change crews and cabooses. Such trains, when consisting of more than 70 cars, are also reswitched, the excess cars being cut off, to be stored until sent forward either in trains originating at Yuma, or in later trains arriving at Yuma from the west with less than 70 cars. If it were not for the law, by far the greater proportion of defendant's said eastward long trains could and would move through Yuma without substantial change of consist, or any switching other than that incidental to the changing of locomotives and cabooses, or possibly the addition of cars originating at Yuma. The eastbound trains thus required to be switched in order to conform to the law are delayed at Yuma for varying periods; and the cars set out from said trains and there, after moved on later trains also suffer substantial delays. All of said delays are solely due to the law, and could and would be avoided and eliminated if the law were set aside.

All westward freight trains of defendant arriving at Yuma are stopped there, and cabooses and locomotives are changed. Such trains are likewise generally consolidated into the longer trains permitted in California, in order to avoid and, as far as possible, minimize the extra expense of operating additional and unnecessary trains, and to confine such train operations to the State of Arizona. Such reconsisting and consolidation involve delays to the trains and cars affected thereby; and each and all of said delays are created by and are solely due to the law, and likewise could and would be eliminated and avoided if the law were not in effect.

Sines, R. 61-66, 2582, 3169-3170, 3309-3313; *G. C. Baker*, R. 2358, 2380-2382.

Exhibit 215.

Delays at Lordsburg and points east thereof: Defendant's westward freight trains arriving at Lordsburg are

stopped at that point to change cabooses, and also frequently locomotives. If the trains consist of more than 70 cars, the excess cars must be cut off and stored, and moved forward on later trains. These reconstituting operations cause delays to the trains involved, and also to the cars thus shut off and stored for later movement. All of said delays are solely due to the necessity of complying with the law, and could and would be avoided if the law were set aside.

Defendant's eastward freight trains arriving at Lordsburg from Arizona also change cabooses and frequently locomotives at that point. For various reasons, and particularly because of being operated close to definitely scheduled times, about 75 per cent of said eastward trains cannot be stopped at Lordsburg to be consolidated into the longer trains permitted in New Mexico, and they are therefore operated through to El Paso as short trains. The remainder are held at Lordsburg for consolidation, and are operated east of that point as long trains. Such consolidations involve varying delays to the trains and cars in question, which delays are likewise solely due to the law, and [fol. 6170] can and could be avoided only by conforming to the law's restrictions in the territory east of Lordsburg, and between that point and El Paso, a distance of 148 miles, as aforesaid.

Frequently westbound empty freight cars available and due for movement from El Paso via Lordsburg into and across Arizona are required to be held and stored at Lordsburg, because of the impossibility of handling such cars out at once in short trains operating west of that point, or of operating immediately any special trains for the purpose; and in such cases, and whenever the available storage space at Lordsburg is filled, such cars must also be stored at Deming or Strauss, New Mexico, or even at El Paso, until such times as movement to and through Lordsburg is again possible. These delays are wholly extra-territorial in character, and are also due entirely to the restrictions of the law.

Herrell, R. 2742-2749; Sines, R. 3168.

Exhibits 1, 175, 185, 215.

(2) Delays to trains en route: Meets and passes.

In the operation of freight and passenger trains over defendant's lines in the affected territory, as well as over

railroads generally, it is frequently necessary for trains to meet and pass each other. The term "meet" is generally understood to refer to the operation whereby two trains proceeding in opposite directions on the same track go by each other. The term "pass" is generally understood to refer to the operation whereby one train, having overtaken one or more preceding trains going in the same direction on the same track, runs around and thereafter precedes the train or trains overtaken. Train meets normally occur only in single-track territory; passes may occur on either single or double track. Whenever a meet or pass occurs, at least one of the trains involved is normally required to [fol. 6171] take siding and stop, and is thus delayed to a certain extent. The greater the number of meets and passes required in the operation of trains over a particular district or subdivision, the greater in the aggregate are the delays to and interferences between the trains affected thereby.

The 1938 redispatching study showed that in that year defendant was compelled to operate 4,304 additional freight trains over its principal main line between Yuma and El Paso via Gila and Lordsburg, which said additional trains were run solely because of the restrictions of the law and would not have been run if it were not for the law; and further, that 16,512 additional meets and passes occurred in said territory in said year, over and above those which would have occurred if long freight-train operation had prevailed; all of which additional meets and passes were therefore solely due to the operation of the aforesaid additional trains, and thus solely due to and occasioned by the law. Expressed in percentages, the law thus compelled an increase in the total number of trains run (both freight and passenger) in said territory, over the number that would otherwise have been necessary, of about 28.4 per cent; whereas the number of meets and passes between all the trains run (both freight and passenger) in said territory was thereby increased about 63.0 per cent.

*Herbert, R. 2449-2452; G. C. Baker, R. 2683-2684;
Sines, R. 3186-3213, 3846-3854, 4122-4128, 4218-
4220; Darnil, R. 4402-4405; Ash, R. 4823-4825;
Menzies, R. 5246-5247.
Exhibits 220, 226, 298.*

(3) Delays to and interferences with passenger trains and traffic.

In general, the restrictions of the law create delays to and interference with the movement of passenger trains [fol. 6172] and traffic, in the affected territory, similar to those imposed upon freight traffic; however, because of the nature and character of passenger traffic, and more especially because of the 14-car limit on passenger trains, the law affects such trains at points and over portions of defendant's lines outside as well as within Arizona; and the extra-territorial effects are even greater, relatively, than in the case of freight trains.

Thus, passenger trains approaching Arizona from the east must often be reduced in length, both at points near the Arizona boundary such as Lordsburg and Rodeo, New Mexico, and also frequently at El Paso, the excess cars being either transferred to other scheduled trains operating over the same or alternate routes, or left behind to be picked up by later trains, or in some cases, made into special and extra sections and operated either ahead of or following the regular trains from which such cars were taken. Each train from which cars are taken under such circumstances is frequently further delayed at Tucson, or Yuma, or some point further west, in order to return to it cars which have been separately run across or partly across the state of Arizona.

Eastbound passenger trains moving or intended to move across Arizona also suffer delays and interferences, largely similar to those above described as being imposed upon westbound trains; such delays and interferences taking place both at Yuma and, frequently, at Los Angeles as well.

Cars originating at points en route such as Yuma, Phoenix, Tucson or El Paso, or coming to defendant's line at those or other points in the affected territory for movement in passenger trains across or within Arizona, frequently must be set out, or left behind, or otherwise delayed [fol. 6173] because of being handled in trains or over routes other than those upon which they were intended and scheduled to be moved, solely because their movement in the proper and intended trains would cause the latter to exceed the 14-car limit.

A detailed study and analysis of the passenger trains and traffic handled in the affected territory during the year 1938

developed that on 222 separate occasions, involving 359 different passenger trains, passenger cars had to be switched from their trains, and set out to be picked up by other trains, or moved as extra sections at or from various points in the territory between and including El Paso and Los Angeles; that 315 such cars were set out and 338 such cars picked up (the difference being principally accounted for by head-end cars which were added as "buffers" on extra sections); and that such interferences caused 63 trains to be delayed, an average of 15 minutes each. 19 of the delays or interferences referred to, involving 30 trains, occurred at points outside of Arizona.

Included in the instances enumerated above were various kinds of annoyances and interferences developed by analysis of individual cases, as follows:

Deadhead equipment was delayed at various stations between and including Yuma, Arizona, and El Paso, Texas, in 45 instances, involving 89 trains and 51 cars. The total delay to such deadhead cars was 499 hours 29 minutes, or an average of 9 hours and 47 minutes per car. In 56 instances, involving 112 trains, 67 cars were adversely routed, that is, they were moved by trains or routes other than those originally assigned. In 44 instances, involving 48 trains, 47 car movements were canceled outright, that is, the advertised movement was permanently canceled because prevented by the car limit. In 21 instances, involving 21 trains, helper service was incurred on the Los Angeles Division [fol. 6174] and there was developed thereby, 1,142 locomotive helper miles which would have been unnecessary were it not for the extra-territorial effects of the law. 200 occupied or loaded cars were delayed at various stations, between and including Yuma, Arizona, and El Paso, Texas, by being set out and later picked up, or by failing to be picked up in accordance with schedule, and suffered a total delay of 165 hours, 50 minutes, or an average delay of 50 minutes per car.

The movement of cars over routes or by trains other than those intended compelled defendant to produce, in 1938, 2,203 excess passenger car miles, which excess car-mileage was created by and solely due to the restrictions of the law.

Sines, R. 2492-2499, 2656-2657; 2788-2804, 3327-3340, 4114-4120; *G. C. Baker*, R. 2382-2386.

Exhibits 187, 188, 199, 230.

(4) Summary of effect of delay and interferences.

The effect of the aforesaid delays and interferences occasioned by the law are and will continue to be directly, substantially and seriously to impede the prompt and efficient handling of the interstate freight and passenger traffic carried in the trains operating over defendant's lines in the affected territory, and to hamper seriously, and in many cases to prevent, the on-time delivery of said traffic at destinations and/or points of interchange with defendant's connections.

Detailed studies were made by defendant of the traffic handled over the affected lines during the month of June and August, 1938, and April, 1940; contrasts and comparisons being made between:

(i) The handling over the line, and the times of delivery at El Paso (of eastbound traffic) and Yuma (of [fol. 6175] westbound traffic), of fruit blocks and manifest sections, or parts thereof, and of individual cars, as the same actually took place; and

(ii) The handling en route and at intermediate terminals and the times of delivery at the same points, of the same traffic, as performed by the redispached trains.

Said studies showed that, if the law were not in effect, the arrival times at El Paso and Yuma of identified blocks and sections, and individual cars, would on the average be substantially earlier than if the law were in effect, and that the times en route over the lines in the affected territory would, on the average, be correspondingly less; that under the law, fewer of the identified blocks and sections arrived at El Paso or Yuma at or ahead of scheduled times, and that many more were late on schedule; that those arriving ahead of schedule did so by smaller time margins, while those arriving late on schedule did so by greater margins, on the average, than if the law were not in effect.

Each and all of the aforesaid delays and interferences, and each and all of the results thereof, whereby freight or passenger traffic is or will or would be delayed or caused to arrive at terminals, interchange points, or other stations, later than such traffic will or would arrive free of the law,

will and would be occasioned by and solely due to the restrictions and impositions of said Train-Limit Law.

Sines, R. 3300-3318, 3384-3390, 3413-3422, 3442-3446.

Exhibits 227, 228, 237, 238, 243, 244.

[fol. 6176] (c) Reduction in train lengths: Increase in number of trains operated.

(1) Freight train operations.

The enforcement of the law causes and will continue to cause the average and the maximum lengths of defendant's freight trains operated in the affected territory to be greatly reduced, below the average and maximum lengths which would obtain if it were not for the law, and also compels and will continue to compel defendant to operate a substantially larger number of such trains, and correspondingly to produce a substantially greater number of train miles and locomotive miles than would be necessary, if it were not for the law, for the handling of the same traffic volume (expressed in cars or car miles).

Such effects of the law are not confined to Arizona; for the law does and will continue to regulate and control completely the lengths of defendant's freight trains, and the number thereof, operated upon defendant's lines in New Mexico at least as far east as Lordsburg and Rodeo. The law also affects and will continue to affect said train lengths, and the number of trains, as far east as El Paso, Texas.

In the two months (June and August) covered by the 1938 redispatching study, the average lengths of the eastward trains operated over the several freight-train districts between Yuma and El Paso were as follows: from Yuma to Gila, 64.3 cars; from Gila to Tucson, 63.7 cars; from Tucson to Lordsburg, 64.2 cars; from Lordsburg to El Paso, 68.0 cars. If the law had not been in effect, said average train lengths would have been as follows: from Yuma to Gila, 85.2 cars; from Gila to Tucson, 85.9 cars; from Tucson to Lordsburg, 89.1 cars; from Lordsburg to El Paso, 88.7 cars.

[fol. 6177] The average lengths of the westward trains operated in said two-months' period, between terminals, were comparable to but slightly greater than the average lengths of the eastward trains between said points; and if

the law had not been in effect, such average lengths would have increased, to averages comparable to and slightly greater than those of the corresponding eastward trains. The average lengths of the eastward and westward trains operated between Tucson and El Paso via Douglas in said two months was 48.5 cars; if the law had not been effect, the average length of said trains would have been 55.9 cars.

Summarizing, the average length of the trains operated in both directions during the months of June and August, 1938, in the entire district between Yuma and El Paso via Gila and Lordsburg, and between Tucson and El Paso via Douglas, was 64.7 cars; whereas if the law had not been in effect, the average length of said trains would have been 86.6 cars; a percentage increase of 33.8 per cent.

The average length of the trains operated between Tucson and Phoenix in both directions, in December, 1938, was 57.7 cars; if the law had not been in effect, that average would have been 70.2 cars.

The extent of the long freight-train operation, which would have prevailed in the affected territory in 1938, if the law had not been in effect, is as follows: For the Yuma-Gila district, the percentage of short trains would have been 18.23; of long trains, 81.77. For the Gila-Tucson district, the percentage of short trains would have been 17.82; of long trains, 82.18. For the Tucson-Lordsburg district, the percentage of short trains would have been 17.47; of long trains, 82.53. For the Lordsburg-El Paso district, the percentage of short trains would have decreased from 69.32 to 25.82; the percentage of long trains would have increased from 30.68 to 74.18. The percentage of long trains on the alternate main line, from Tucson to El Paso via Douglas, would have increased from 0.68 to 17.23.

That such an extent of long-train operations in the affected territory would and will be readily achieved is shown by reference to operations in Nevada and Utah for a typical four-months' period of 1939. Between Sparks and Carlin, Nevada, in said period, the percentage of short trains was 27.60; of long trains, 72.40. Between Carlin and the Nevada-Utah line, the percentage of short trains was 11.59; of long trains, 88.41. Between the Ne-

vada-Utah line and Ogden, Utah, the percentage of short trains was 14.14, and of long trains, 85.86.

Coincident with the foregoing increases in train lengths, defendant could, in 1938, have handled the same freight traffic which actually moved over the lines between Yuma and El Paso via Gila and Lordsburg, and between Tucson and El Paso via Douglas, with 4304 fewer freight trains, producing 638,569 fewer freight-train miles, and 798,424 fewer locomotive miles; that is to say, the law, by restricting freight-train lengths and thus causing more trains to be run, compelled defendant to operate 30.8 per cent more freight trains, and to produce 33.1 per cent more freight-train miles, and 35.9 per cent more freight-locomotive miles, than would otherwise have been required: though without any increase in the number of cars handled or car miles produced. Of said 638,569 additional freight-train miles, 151,789, or 23.8 per cent, were produced in the states of New Mexico and Texas, and were caused by and solely due to the extra-territorial effects of the law upon defendant's operations.

On the Phoenix line, the law's restrictions caused defendant, during the month of December, 1938, to operate [fol. 6179] 17 additional freight trains, and to accumulate 2,266 additional freight-train miles, and 2,506 additional locomotive miles; or 17.0 per cent more trains, 19.0 per cent more train miles, and 21.0 per cent more locomotive miles, than were necessary except for the law.

The results of the April, 1940, redispersing studies confirm very closely the results obtained from the 1938 study. Thus, said studies show that with unrestricted freight-train operations (i.e., with AC-type locomotives, and siding extensions and other improved facilities as contemplated in the event the law's restrictions are removed, all as heretofore set forth in detail), defendant would have been able to handle the freight traffic which, during the period April 4 to 27, inclusive, 1940, moved over the lines between Yuma and El Paso via Gila and Lordsburg, and between Tucson and El Paso via Douglas, with 378 fewer freight trains, producing 56,182 fewer freight-train miles, and 74,329 fewer locomotive miles, than would have been necessary if the law had been fully observed. Otherwise stated, compliance with the law during said period would have compelled defendant to operate 26.8 per cent more

freight trains, and to produce 29.0 per cent more freight-train miles, and 33.4 per cent more locomotive miles, than would otherwise have been required. 12,023, or approximately 21.4 per cent of said 56,182 additional freight-train miles, were or would have been produced extra-territorially: i.e., in the states of New Mexico and Texas.

Sines, R. 3169-3172, 3199, 3350-3355, 3402-3413.

Exhibits 186, 214, 215, 220, 226, 233, 234, 235, 236, 240, 242, 245, 259, 299, 315, 316.

(2) Passenger train operations.

The law is completely restrictive in holding the lengths of defendant's passenger trains in the districts between [fol. 6180] Yuma and Lordsburg and Tucson and Rodeo to a maximum of 14 cars, and is generally restrictive, extra-territorially, as far west as Los Angeles, and as far east as El Paso. Thus in 1939, no long passenger trains were operated in either direction between Yuma and Lordsburg or Rodeo; while only 12.19 per cent of the eastward passenger trains from Los Angeles to Yuma, and only 3.08 per cent of the westward passenger trains from Yuma to Los Angeles were long trains. Between Lordsburg and El Paso only 1.30 per cent of the trains were long trains.

Solely because the law thus restricts its passenger trains to the 14-car maximum, defendant is compelled to operate many more such trains than would otherwise be required, and as a result to produce a substantial volume of additional and unnecessary passenger-train miles and locomotive miles. In 1938, as shown by the passenger redischpatching study, 33 additional and unnecessary sections of passenger trains were operated in the affected territory, involving the production of 14,218 additional train miles and 18,860 additional locomotive miles. 3,902 of said additional passenger train miles and 5,042 of said additional locomotive miles were produced outside of Arizona.

If it were not for the law, defendant could and would operate many more long passenger trains in the affected territory, corresponding in lengths to the trains operated on other portions of its system. The operation of such long passenger trains in Arizona, and in the affected territory generally, is entirely practicable; as is shown, *first*, by the fact that in 1940 defendant actually operated long passenger trains in Arizona on 62 occasions, producing

within the state 15,857 long-train miles, and 243,749 car miles (the average length of the long trains thus operated having been 15.37 cars, and a considerable number of said [fol. 6181] trains having contained 16 or more cars each); second, by the fact that on defendant's principal main lines, other than those across Arizona, passenger trains of more than 14 cars, and in fact frequently containing 17 cars or more, are commonly and regularly operated. The operation of long passenger trains on the main lines of defendant's system generally has heretofore been found to be the usual and ordinary practice. On the line across Nevada and Utah, for example, in the year 1939, long passenger trains constituted 43.79 per cent, and trains of 17 cars or more 18.24 per cent, of the entire number operated.

Sines, R. 2495-2499, 3327-3340, 3346-3349, 3426-3432.
Exhibits 187, 188, 230, 231, 232, 246.

(d) Increased annual expense of operation, etc., imposed by the law:

The enforcement of the law against defendant, and defendant's consequent compulsory compliance therewith, causes and will continue to cause additional operating and other expenses to be imposed upon and incurred by defendant, solely by reason of said law, amounting to not less than \$394,900 per year; all of which expense is and will continue to be recurring, and irreparable, and could and would be saved and avoided if defendant were relieved of the law's restrictions.

Said sum of \$394,900 per year represents the difference between the operating and other expenses, based upon operations during the year 1938, actually incurred by defendant in the affected territory, under the short-train method of freight and passenger train operation heretofore and presently followed; and the corresponding expenses which would be incurred, also based upon the handling of the 1938 traffic volume, in said affected territory, [fol. 6182] if the law were repealed or set aside, and defendant were thereby enabled to adopt and follow the long-train method of operation.

The following are the items as to which the amounts of the potential savings have been definitely determined and shown of record:

(I) Savings in operating expenses in freight service, said expenses including only those incurred for

locomotive fuel, and trainmen's and enginemen's wages, amounting to \$397,515 per year.

(2) Savings in passenger-train operating expenses (said expenses including those incurred for locomotive fuel, trainmen's and enginemen's wages, enginehouse expenses, other locomotive supplies, and locomotive repairs), amounting to \$10,884 per year.

(3) Annual interest, maintenance, and depreciation charges, amounting to \$8747 per year, upon the additional investment in twenty-one cabooses, which said cabooses are required in the affected territory solely because of the additional freight trains compelled to be run because of the law, and as heretofore found, would not be required if the law were set aside.

These itemized savings in current expenses and charges, totaling \$417,146, would be partially offset by increases in annual interest and maintenance charges upon certain equipment and facilities which, as stated in finding IX (b), defendant would construct or acquire in order to conduct long freight-train operations readily, efficiently, and economically; such increased annual charges being as follows:

[fol. 6183] (1) Interest and maintenance charge upon extensions of various yard tracks and sidings in the affected territory, amounting to \$40,009 per year.

(2) Interest and depreciation charges upon the increased investment in larger locomotives, which defendant would use in freight service in the affected territory, in lieu of the locomotives presently in use, amounting to \$19,606 per year.

(3) Interest and maintenance charges upon the expanded roundhouse, water service, and shop facilities necessary to provide for the proper servicing and maintenance of such larger locomotives, amounting to \$28,137 per year.

The total of such offsetting charges amounts to \$87,752 per year, which figure, subtracted from the foregoing total of itemized annual savings, amounting to \$417,146, leaves a net annual saving in expenses, which defendant could realize by adopting long-train operation in the affected territory, amounting to \$329,394.

In addition to said sum of \$329,394, defendant also presently incurs further annual expenses, by reason of the law, not included in said sum, over and above those which would be incurred if it were not for the law, on account of repairs to locomotives used in freight service in the affected territory. The record indicates that the added expense for such freight locomotive repairs, which is therefore an additional amount which would be saved by the adoption of long-train operation in said territory, is not less than \$65,500 per year. The total amount of the added annual expense which the law thus imposes upon defendant is therefore not less than \$394,900.

[fol. 6184] *Extra-territorial portion of the added expense imposed by the law:* A substantial portion of said additional annual expense imposed by the law is and will continue to be incurred outside of Arizona, because associated with or occasioned by the aforesaid changes in or additions to defendant's operations, in those portions of the affected territory lying wholly within California, New Mexico, and Texas, which are brought about or necessitated solely by the restrictions of the law. This extra-territorial expense can be and has been accurately computed, by determining the amount and proportion of the total additional train service (measured in train miles) compelled by the law, which is performed outside of Arizona. The extra-territorial portion of the aforesaid net additional annual expense of \$394,900 includes particularly the following:

(1) Additional freight operating expenses, associated with 151,789 additional extra-territorial freight-train miles, amounting to \$75,712 per year.

(2) Additional passenger operating expenses, associated with 3902 additional extra-territorial passenger-train miles, amounting to \$3,319 per year.

The aggregate of said additional extra-territorial expense amounts to \$79,031 per year, to which is to be added the additional expense of repairs to freight locomotives incident to the additional freight-train service outside of Arizona compelled by the law; which expense, as indicated by the record, is not less than \$15,569 per year.

The total of the compelled additional extra-territorial expense is therefore \$94,600.

The redispaching studies for the month of April, 1940, heretofore mentioned, confirm closely the foregoing figures [fol. 6185] of compelled additional annual expense, both in the aggregate, and as incurred outside of Arizona.

Garverick, R. 3012-3034; *Sines*, R. 3266-3280, 3318-3327, 3346-3349, 3491-3496, 3855-3857, 4210-4216.

Exhibits 209, 224, 225, 229, 231, 232, 250, 251, 252, 253, 254, 256, 257, 258, 259, 299, 317, 318.

XI

Slack and Slack-Action in Trains: Nature, Cause and Effects

(a) Description of draft rigging.

Freight and passenger cars and trains are coupled together by means of devices known as couplers, a coupler being located at each end of each car. Each coupler is attached to a draft gear, the latter being in turn attached to the underframe, which carries the body of the car. The couplers provide non-rigid connections between the several units (the locomotive and cars) which comprise the train. The purpose of the draft gear, as hereinafter more fully explained, is to afford a controlled resistance, effective when required to cushion and absorb the striking and pulling shocks of coupling, starting, stopping, and train movement generally, and thereby to protect the car structure and the lading within the car from injury and damage. The coupler and draft gear, with necessary connections and attachments, are collectively termed the draft rigging.

When freight cars are coupled together, there exists at the coupler faces a small amount of play or free motion (varying from $\frac{7}{8}$ inch to $1\frac{1}{8}$ inches), as between each pair of coupled cars. This is provided for in the construction [fol. 6186] of the couplers themselves, and is necessary to the proper operation of freight trains, in that it permits the lateral and vertical movements occurring when trains round curves, pass over dips and humps in track, and, in starting, assists in enabling cars to be moved successively instead of simultaneously, which would be required if couplings were solid.

In addition to the free motion at the coupler faces, there is the controlled motion (heretofore also referred to as "controlled resistance") which exists in the draft gears themselves, and is controlled by the spring-actuated friction members, or by springs alone, which form the essential working parts of the draft gears.

Leriche, R. 74-77; *Parke*, R. 1449-1450; *Cartmill*, R. 1792-1794; *Bohnstengel*, R. 3078-3079, 3089-3099, 3109-3110, 3119, 3122-3124; *Durnil*, R. 4391-4397; *Cooper*, R. 4541-4543; *Stevenson*, R. 4629-4633, 4639-4644; *Ash*, R. 4826-4831.

Exhibit, 210.

(b) Action of Draft Gears.

Draft gears presently in use on freight cars are of two general types: (1) the friction type, which uses both springs and friction members; (2) the tandem-spring type, which employs heavy springs, but has no friction members. All of defendant's freight cars (including, for this purpose, refrigerator cars owned by Pacific Fruit Express Company) used in interchange service are equipped either with approved types of friction draft gears, or with tandem-spring draft gears; and, as heretofore found, by far the greater proportion of such cars are equipped with friction gears.

Whenever a push or impact, as, for example, in the coupling of cars, or a pull, as for example, in the starting [fol. 6187] of a train, is given to an individual car, that push or pull is transmitted first to the coupler itself, and then through the coupler shank to the draft gear, and thereby causes the draft gear to be compressed. Because of the construction of the draft gear, compression takes place in the case of pull as well as upon push, or so-called "buff". When force is applied to the coupler with sufficient rapidity to produce shock, the draft gear absorbs the shock to the limit of its capacity, and dissipates this shock energy, through the absorptive power of the springs, and the heat created by the operation of the friction members. The standard type of friction draft gear required the application of from 300,000 to 500,000 pounds of "buffing" or pulling force at the coupler face, in order to produce complete closure of the draft gear; i.e., in order to produce the maximum amount of motion or "controlled resistance" of which the draft gear is capable. The

total amount of motion of which a standard friction type of draft gear is capable, in the event of the application of force sufficient to cause complete closure, is $2\frac{3}{4}$ inches from the mean or normal position. The potential motion of a tandem-spring draft gear is about 2 inches, from normal position to complete closure; and this may be developed by application of from 60,000 to 65,000 pounds pressure.

Leriche, R. 74-77, 87; Cartmill, R. 1781-1792; Bohnstengel, R. 3090-3108, 3111-3113, 3115-3116, 3139-3142; Barker, R. 3440-3441.

Exhibits 2, 210, 247.

(c) **Slack and Slack-Action Defined.**

By the term "slack", as used herein, is meant the amount of the movement, including both the free motion at the coupler faces and the "controlled resistance" in the draft [fol. 6188] gears, which may take place, between the coupled cars of a moving train. By the term "slack-action", as used herein, is meant the accumulated effect of such motion, as it may be created or brought into play as the result of train operations. Slack and slack-action exist and occur in trains of all lengths.

(d) **Factors Affecting Slack-action: Amount Developed in Operation.**

There are a number of factors affecting the amount and severity of the slack action which may take place in a freight train, at any particular time while the train is in motion. Thus, for example, when a train is in motion, immediately after starting from a standstill, the draft riggings in the head portion of the train will be extended, so as to increase the distance between cars somewhat more than if the cars were standing free. In the center and rear portion of such train, however, the draft gears would be but slightly extended, if at all, although the free slack at the coupler faces would be completely stretched. If an emergency application should take place, even though at or near the head end of the train, the potential slack-action which might be developed could not exceed the amount of the increased distance between cars, created by the compression of the draft gears due to the starting effort of the locomotive, plus the amount by which the draft gears might be compressed in the opposite direction upon stopping, plus whatever free slack might

be developed at the coupler faces. The total amount of slack thus created normally would not exceed, on the average, more than about 6 or 7 inches per car throughout the train.

In general, more slack, and consequently greater slack action in the event of an emergency, may be developed when a train is at low speed, accelerating from a stop, than would [fol. 6189] be developed in the same train while proceeding at normal road speed between stations; both because of the momentum developed at higher speeds; and further because when trains are in motion, the draft gears tend by their action to adjust the slack.

The grade upon which a train is proceeding has a substantial effect upon the slack, and consequently upon the slack action; if a train is proceeding against an adverse grade the tendency is for the slack to be somewhat more stretched than if the train were on level track; whereas if a train is proceeding down-grade, the slack will be bunched or compressed to a much greater extent than on level track.

Whether a train is accelerating or decelerating likewise has a substantial effect upon the slack, and the consequent slack-action. As above stated, if a train is moving from a stop, or is attaining a higher speed, the tendency is for the slack to become somewhat more stretched than if the train is slowing down, or preparing to stop, or is about to stop.

The speed of the train, the extent to which the slack is extended or bunched, the consist of the train whether all loads or empties, and if partly loads and partly empties, the position of the loads and empties, and the action taken by the engineer, have a very definite effect upon the slack action. It appears that normally the slack-action at the rear of a freight train is more severe, at speeds of 10 miles per hour or less, than at ordinary road speeds of 30 to 40 miles per hour, other conditions as to consist of train, grade and length of train being equal. If a train consists of loads slack-action will be less severe than if the train consists of all empties, because the braking power upon the loaded cars is much less, in proportion to the weight thereof, and the momentum of the loads is greater, than in the case of [fol. 6190] empties. If the train consists partly of loads and partly of empties, and the loads are at the head end of the train, the slack-action at the rear will be less severe than if the empties were at the head end of the train and the loads behind.

The extent and amount of the slack-action in a freight train in operation, and whether the slack is extended or bunched, are to a large degree within the control of the engineer, who is able, by manipulation of the air brakes, and the power of the engine, and by taking into account the grades upon the track over which the train is running, so to handle the train as to avoid any severe shock or slack-action at the rear of the train, in ordinary operation.

It is not true, as apparently contended by plaintiff, that the amount and severity of slack-action occurring in a freight train depend solely upon the number of cars in the train. Said contention takes into account only the number of cars comprising the train, but fails to take account of any of the other factors affecting slack-action shocks and the severity thereof, heretofore mentioned; namely, grades, speed of trains, consist of trains, whether the cars therein are loaded or empty, and if loaded, the weight of the loads, and the control exercised and exercisable by the engineer.

It is likewise not true that the Train-Limit Law, by restricting the lengths of freight trains, either eliminates or substantially reduces the number or severity of the casualties attributable to slack-action shocks in cabooses or other cars at or near the rear end of trains. The evidence indicates that in the operation of long trains, there have been many instances of severe jerks and jolts occurring at the rear end of the train because of slack-action, and that in [fol. 6191] juries have been suffered by brakemen and conductors as a result thereof. The record contains many similar instances occurring in connection with the operation of short trains. It is also shown that emergency stops of long trains have taken place, without causing any severe slack-action shocks to the caboose or injuries to the occupants thereof. Emergency stops of short trains have occurred, accompanied by severe slack-action shocks to the caboose and injury to the occupants thereof. The evidence shows that these different results, as herein indicated, on long and short trains arise because of the presence or absence, in the particular operation of the factors directly contributing to and controlling the severity of the slack-action.

Bohnstengel, R. 3115-3123, 3131-3133; *Durnil*, R. 4432-4435; *Kennedy*, R. 4482, 4507-4509, 4516-4523; *Cooper*, R. 4536-4540; *Stevenson*, R. 4621-4624, 4629, 4634-4635, 4639-4644; *Ash*, R. 4787-4788,

4792-4795, 4826-4839; *Fail*, R. 4854-4857; *Shaw*, R. 4928-4930, 4933-4935; *Fifield*, R. 5184-5208, 5211-5217, 5219-5222; *Menzies*, R. 5240-5244.

Exhibits 210, 266, 270, 274, 275, 280, 295, 386, 387.

(e) Slack-action in Passenger-train Operation.

The couplers and draft gears on passenger cars generally resemble those on freight cars, and perform similar functions. While slack and slack-action therefore also exist and occur upon passenger trains of all lengths, it does not appear from the testimony that the emergency stops or other circumstances by reason of which such slack-action may be developed are more frequent or the resulting shocks any more severe, on long than on short passenger trains; nor does it appear that the slack-action occurring in passenger-train operations, whatever the train length, is of sufficient severity to cause serious injury or damage.

[fol. 6192] From the standpoint of the safety of persons and property, slack and slack-action on passenger trains are of no significance whatever.

Leriché, R. 96; *Parke*, R. 1449-1450; *Bohnstengel*, R. 3093, 3104-3105; *Cheek*, R. 4581-4588, 4600-4604, 4610-4616; *Hardwicke*, R. 5079-5080; *Fifield*, R. 5209-5210, 5222.

Exhibits 4, 107, 271, 292, 294.

XII

Safety of Operation as Affected by Train Lengths: Accident and Casualty Statistics

(a) Accident Reports to Interstate Commerce Commission.

Pursuant to the Accidents Reports Act (36 Stat. 350; U. S. Code, Title 45, Secs. 38 et seq.) the Interstate Commerce Commission has for many years required monthly reports of railway accidents, in considerable detail, on forms prescribed by the Commission and filed under oath by the carrier. Those reports are annually summarized in accident bulletins published by the Commission in statistical form, wherein the accidents so reported are tabulated and segregated in great detail by classes and causes, and in

accordance with the classification of accidents contained in the Commission's rules for reporting accidents.

Reportable railway accidents are divided into three primary groups: train accidents, train-service accidents, and non-train accidents. Reportable train accidents are those—with or without casualties—that arise in connection with the operation or movement of trains, locomotives or cars, and result in damage to the equipment or other railway property in excess of \$150, including cost of clearing the [fol. 6193] wreck and local expense of transferring lading (but not damage to lading). Reportable train-service accidents are those that arise in connection with the operation or movement of trains, locomotives or cars, and result in casualties to persons, but not damage to equipment or other railway property in excess of \$150 as just defined. Reportable non-train accidents are those that do not result directly from the operation or movement of trains, locomotives or cars.

A casualty is not reportable unless it results in the death of a person, or injury to an employe, either on or off duty sufficient to incapacitate him from performing his ordinary duties for more than three days in the aggregate during the ten days immediately following the accident, or injury to a person other than an employe (which includes passengers) if the injury is sufficient, in the opinion of the reporting officer, to incapacitate the injured person from following his customary vocation or mode of life for a period of more than one day. Train accidents and train-service accidents are reported on a form prescribed by the Commission and designated as Form T, a separate sheet being used for each reportable train accident or train-service accident.

All of the statistical showings of train and train-service accidents received in evidence were based on the statistics of accidents actually reported to that Commission or reportable to that Commission. The Nevada statistics of accidents and casualties on defendant's lines included with those reported to the Commission a few that were reportable under the rules of the Commission, but through inadvertence had not been reported, although a record thereof was in the defendant's files.

Sullivan, R. 3559-3571, 3582, 3611, 3883-3886.

Exhibits 9, 260, 261.

[fol. 6194] (b) Bases for Computing Accident and Casualty Rates:

Train accidents with or without casualties, or casualties alone, may be measured, as to their frequency, on the basis of locomotive miles, train miles, or car miles operated; casualty frequency may also be measured against man hours worked, or man miles traveled. In its published accident statistics the Interstate Commerce Commission measured train accidents against locomotive miles, and casualties against locomotive miles and man hours; in addition to those bases the railroads of the United States, including defendant, use both the train mile and the car-mile basis. Man hours and train miles are commonly used as bases for measuring casualty frequency in relation to the exposure of employes to injury. The car-mile basis is used and is appropriate to determine casualty frequency in relation to the volume of traffic moved. The locomotive mile is also a satisfactory basis for comparing the frequency of casualties sustained in train and train-service accidents in all classes of service, because all classes of train service accumulate locomotive miles; whereas certain classes of service, such as yard service, and light-engine movements, do not accumulate train miles or car miles.

A train mile is the movement of a train a distance of one mile. A locomotive mile is the movement of a locomotive a distance of one mile, under its own power. A car mile is a movement of a unit of car equipment a distance of one mile. Man hours represent the period, expressed in hours of time, that employes are on duty. A man mile represents a mile that an employe actually travels on duty. The term "casualty" as used in these findings includes both deaths and personal injuries, and, unless otherwise specified, means a casualty reportable to the Interstate Commerce [fol. 6195] Commission under its Rules for Reporting Accidents.

Sullivan, R. 3574-3579, 3612-3614, 3659-3661, 3663-3664, 3693, 3720-3723.

(c) National Accident and Casualty Statistics:

Tables are in evidence which were compiled from the published statistics of the Interstate Commerce Commission for the years 1923-1939, inclusive, and which relate to the frequency of reported accidents and casualties on all of the

Class I railroads of the United States. The increase in the length of trains on Class I railroads of the United States during that seventeen-year period has been dealt with in Finding VIII (b) *anté*.

Exhibits 262 to 271 inclusive, 312.

(1) All Employees:

The tables referred to show that accompanying the increase in the length of trains on Class I railroads from 1923 to 1939, there has been a continuous and marked downward trend in the frequency of casualties to all classes of railroad employees on duty sustained in train and train service accidents; casualty rates being for 1923, 8.24 per million man hours, 22.79 per million locomotive miles, 32.15 per million train miles, and 136.0 per 100 million car miles; and for 1939, 2.87 per million man hours, 5.64 per million locomotive miles, 7.87 per million train miles, and 26.58 per 100 million car miles. For the six year period 1923-1928 the average casualty rates were 7.08 per million man hours, 18.49 per million locomotive miles, 26.02 per million train miles, and 102.04 per 100 million car miles; and these rates declined to the following during the five-year period 1935-1939: 3.12 per million man hours, an improvement of 55.93 [fol. 6196] per cent as compared with the earlier period; 6.15 per million locomotive miles, a corresponding improvement of 66.74 per cent; 8.59 per million train miles, a corresponding improvement of 66.99 per cent; and 30.28 per 100 million car miles, a corresponding improvement of 70.33 per cent.

Sullivan, R. 3571-3574, 3886-3889.

Exhibit 262:

(2) Road Trainmen and Enginemen on Duty, All Classes:

Considering casualties sustained only by road trainmen and enginemen on duty in train and train-service accidents in all classes of service on Class I railroads during the same 17-year period, the 1923 rates were 43.34 casualties per million man hours, 17.38 per million train miles, and 73.52 per 100 million car miles; in 1939, the corresponding rates were 12.87 per million man hours, 4.13 per million train miles, and 13.94 per 100 million car miles. Comparing the rates for the 6-year period 1923-1928 for these casualties with the corresponding rates for the 5-year period 1935-

1939, there were the following improvements: in the rate per million man hours from 32.12, for the earlier period, to 14.16 for the later period, or 55.92 per cent; in the rate per million train miles from 13.54 to 4.64, an improvement of 65.73 per cent; and in the rate per 100 million car miles from 53.11 to 16.35, an improvement of 69.21 per cent. The term "road trainmen and enginemen" includes conductors, brakemen, flagmen, train baggagemen, engineers and firemen, engaged in passenger, freight or work service, but does not include engine hostlers.

Sullivan, R. 3585-3589.

Exhibit 263.

[fol. 6197] (3) Road Freight Trainmen and Enginemen on Duty:

Considering casualties sustained only by road freight trainmen and enginemen on duty in train and train-service accidents on Class I railroads of the United States during the same 17-year period, the casualty rates declined as follows: from 39.55 per million man hours in 1923, to 14.68 in 1939; from 26.83 per million train miles to 6.51; from 70.60 per 100 million car miles to 13.44. Comparing the six-year period 1923-1928 with the five-year period 1935-1939, the improvements in the average casualty rates were as follows: from 34.42 per million man hours in the earlier period, to 15.91 in the later period, or 53.78 per cent; from 21.30 per million train miles to 7.21, or 66.15 per cent; and from 50.68 per 100 million car miles to 15.55, or 69.32 per cent.

Sullivan, R. 3589-3592, 3891.

Exhibit 264.

(4) Road Freight Conductors, Brakemen and Flagmen:

Considering only those casualties sustained by road freight conductors, brakemen and flagmen on duty on Class I railroads of the United States, occurring in train and train-service accidents, it is shown that over the period of 17 years above mentioned there has also been a general downward trend from year to year in the number of such employees killed as well as those injured, whether considered in the absolute number or in the casualty rates measured against either man hours worked or train miles or car miles accumulated. Thus in 1923 there were 12,232 such casual-

ties, 322 being fatal; in 1939 there were 2,380 such casualties, 86 being fatal. In 1923 the casualty rates were: 45.33 per million man hours, 18.02 per million train miles, 47.42 per 100 million car miles; and in 1939 those rates were 20.33 per million man hours, 5.15 per million train miles, and [fol. 6198] 10.64 per 100 million car miles. Comparing the average casualty rates for the five years 1935-1939 with the earlier six years 1923-1928, the improvement or decrease in the casualty rate per million man hours is 48.15 per cent; in the rate per million train miles, 62.72 per cent; and in the rate per 100 million car miles, 66.21 per cent.

Sullivan, R. 3593-3595.

Exhibit 265.

(5) Conductors, Brakemen and Flagmen—Slack Action:

Casualties due to sudden stop, start, lurch or jerk of train or car sustained by road freight conductors, brakemen and flagmen on duty in train-service accidents on all railroads of the United States, when related to the number of freight train miles or freight train car miles accumulated, show a similar substantial and generally continuous downward trend. Thus the casualty rate per million train miles for the six-year period 1923-1928, for this type of accident, was 2.75, and for the five-year period 1935-39, it was 1.05, an improvement or decrease of 61.82 per cent. The corresponding casualty rates per 100 million car miles were for 1923-1928, 6.54; for 1935-1939, 2.27, an improvement of 65.29 per cent. The decrease in the absolute number of the casualties of this type is equally marked. Thus, in 1923, approximately 25,800,000 freight-car miles were accumulated, and there were 1,957 casualties to road freight conductors, brakemen and flagmen occurring in train-service accidents caused by sudden stop, start, lurch or jerk of train or car; in 1939 there were approximately 22,400,000, 000 freight-train car miles accumulated, but the casualties of the type just described had declined to 399, only three of which were fatal.

The relative unimportance of the type of casualty particularly referred to in this sub-finding is shown by the comparison of the total number of such casualties to the total number of casualties to all classes of employes on duty. In the five-year period 1935-1939 there were 37,346 casualties to all classes of employes on duty, sus-

tained in train and train-service accidents on Class I railroads of the United States. In the same period there were but 2,473 casualties of the so-called "slack-action" type sustained by road freight conductors, brakemen and flagmen, on all railroads (including other than Class I) of the United States. In the year 1939 there were 6,713 casualties to all classes of employes on duty on Class I railroads sustained in train and train-service accidents; but only 399 so-called "slack-action" casualties to road freight conductors, brakemen and flagmen on all United States railroads. The fatalities in train and train-service accidents in 1939 numbered 353; but there were only three "slack-action" fatalities.

Exhibits 262, 266.

(6) Passengers on Trains:

Casualties to passengers on trains, sustained in train and train-service accidents on Class I railroads of the United States, have likewise shown a generally downward trend during the 17-year period 1923-1939. In the six-year period 1923-1928 the average casualty rate per million passengers carried was 5.16; the average per 100 million passenger miles accumulated was 12.91. In the five-year period 1935-1939 the average casualty rate per million passengers carried was 5.00, an improvement of 3.10 per cent as compared with the earlier period; and per 100 million passenger miles, 1063, an improvement of 17.66 per cent, as compared with the earlier period.

Sullivan, R. 3611-3615.

Exhibit 267.

[fol. 6200] (d) Train Accidents—National:

These accidents involving property damage in excess of \$150, with or without reportable casualties, are classified as collisions, derailments, locomotive-boiler accidents, other locomotive accidents, and miscellaneous train accidents. The total number of all types of train accidents in all classes of service, per million train miles, decreased from 17.38 in 1923-1928, to 8.05 in 1935-1939: an improvement of 53.68 per cent; and the number of head-on and rear-end collisions per million train-miles, has been reduced from .50 in 1923-1928 to .19 in 1935-1939: an improvement of 62.00 per cent. The downward trend from year to year has been fairly

uniform. Fewer trains running on the road provide fewer opportunities for head and rear-end collisions and the number of locomotive boiler and other locomotive accidents necessarily is directly related to the number of locomotive miles run.

Train accidents caused by defects in or failure of equipment on all railroads of the United States, and the casualties to trainmen sustained in such accidents, greatly decreased during the 17 years 1923 to 1939. The total number of train accidents caused by defects in or failures of equipment has been steadily reduced from 11,822 in 1923 to 2,039 in 1939, or 82.75 per cent. Relating the totals by periods of years to the number of train miles operated, produces rates of 6.69 accidents per million train miles in 1923-1928, and of 3.06 in 1935-1939—an improvement or decrease of 54.26 per cent. Trainmen's casualties in these accidents did not exceed in any one of the years one casualty in five million train miles; the rate per million train miles in 1923 being .19, and in 1939, .05—an improvement or decrease of 74 per cent. Illustrating how few casualties [fol. 6201] are sustained in any year by trainmen in all reportable train accidents due to defects in or failures of equipment along with the generally continuous decrease from 1923 to 1939, it appears that in the year 1939, only 5 trainmen were killed, and only 41 trainmen were injured, or at the rate of but one such casualty for each 18,177,800 train miles operated.

Although during the period 1923-1939, covered by the National statistics in evidence, there have been substantial improvements in the road-bed and equipment of American railroads, it is clear from a consideration of all of the evidence in the case that a considerable part of the improvement in casualty rates on those railroads during the same period is directly attributable to the adoption and growth of the standard long-train method of handling freight and passenger traffic, because thereby a substantially less number of train units was operated than would have been operated for the same volume of traffic had not the long-train policy been followed.

Sullivan, R. 3626-3632, 5132-5138.

Exhibits 269, 390.

(e) Commission's Investigation of Train Accidents—National:

The Interstate Commerce Commission has a Bureau of Safety through which it conducts the investigations authorized by Section 3 of the Accident Reports Act. The Bureau summons and examines witnesses, investigates at the scene of the accident and elsewhere, and makes a detailed report and conclusions to the Commission, which officially publishes summaries of those reports quarterly and has done so at least since the year 1927. Such investigations have been held as to more than 90 per cent of collisions, derailments or other accidents which resulted in fatalities to passengers or employees.

Sullivan, R. 3634-3635.

Exhibits 270, 312.

(1) Freight train accidents:

During the twelve-year period, 1928-1939, the Bureau investigated 1,002 train accidents, all of which are summarized in the Commission's said quarterly reports; of that number 561 involved freight trains, of which 298 were collisions, 206 were derailments and 7 were miscellaneous train accidents. Those accidents involved 728 freight trains, of which 574, or 78.8 per cent, consisted of 70 cars or less; of that 574 trains, 344 or 60 per cent, contained 40 cars or less.

Negligence of employees was the cause assigned by the Bureau for 349 of the accidents investigated involving freight trains, or 62.2 per cent of the 561 freight train accidents investigated. Of the number charged to negligence of employees 409 of the trains involved, or 82.0 per cent, consisted of 70 cars or less. Defects in or failures of equipment were charged with 79 freight-train accidents, an average of slightly over 6.5 accidents per year, or 14.1 per cent.

Although under Section 3 of the Accident Reports Act the Commission is empowered to make and has frequently made such recommendations as it may deem proper, it did not on any of the quarterly reports for the twelve years 1928-1939, above referred to, find that the length of a train had any bearing on the accident, or that the accident might [fol. 6203] have been avoided had a train been shorter, or

make any recommendations respecting train length. It made recommendations in many other respects.

Sullivan, R. 3636-3646.

Exhibits 270, 312.

(2) Passenger train accidents:

During the six-year period 1934-1939, the Bureau investigated 520 accidents; of that number, 232 involved passenger trains, of which 96 were collisions, 120 were derailments, and 16 were miscellaneous train accidents. Those 232 accidents involved 267 passenger trains, of which 261, or 97.8 per cent, consisted of 14 cars or less; of those 261 trains, 224, or 85.8 per cent, consisted of 11 cars or less.

Negligence of employees was the cause assigned by the Bureau for 112 of said 232 accidents involving passenger trains, or 48.3 per cent thereof. In the accidents charged to negligence of employees, 142 trains were involved; 139 of these trains, or 97.7 per cent, consisted of 14 cars or less. Defects in or failures of equipment were charged with 7 passenger-train accidents, or 3 per cent of the total, all of them occurring on short trains. Collisions with vehicles at grade crossings were charged with 42, or 18.1 per cent, of said accidents, involving 43 trains; 42 of these trains, or 97.7 per cent, were short trains.

Six of said passenger train accidents investigated by the Bureau occurred on defendant's lines. In five of said accidents the trains involved, six in number, were short trains. The train involved in the other accident consisted of 16 cars; the accident was caused by a collision with a motor truck which was driven on the track directly in front of the approaching train. Of the five short-train accidents, two [fol. 6204] were charged to negligence of employees, two to collisions with motor vehicles driven on the tracks, and one to malicious tampering with the track.

Sullivan, R. 3646-3654.

Exhibits 271, 312.

(f) Accident Statistics—Defendant's Pacific Lines:

As hereinbefore found, defendant's railway system operations are in seven states, and except in Arizona it has carried forward the standard long freight and passenger train method of operation since its adoption as a policy in 1923.

(1) Employees on duty—all classes of service—train and train service accidents:

The annual totals of locomotive miles in all classes of service on defendant's lines has varied from a low figure of 32,851,000 in 1933 to a high figure of 58,090,000 in 1926. In the six years 1923-1928 the average number of locomotive miles per year was 53,279,000; and in the five years 1935-1939, the corresponding average was 46,305,000.

During the seventeen-year period 1923-1939, the number of casualties to all classes of employees on duty in all classes of service sustained in train and train-service accidents on defendant's lines has shown a generally and substantially declining tendency. Thus, in the year 1923 there were 806 such casualties, 36 of which were fatal; in the year 1939 there were 344 such casualties, 29 of which were fatal. The casualty rate, per million locomotive miles, during the six-year period 1923-1928 was 11.58; during the five-year period 1935-1939, 8.47; an improvement or decrease of 26.86 per cent.

Exhibit 272.

[fol. 6205]. (2) Trainmen on duty—all classes of service:

The frequency of casualties to trainmen on duty in all classes of service on defendant's lines sustained in train and train service accidents has also substantially declined since 1923; the absolute number of such casualties has likewise shown a generally and substantially declining tendency. Thus in the year 1923 there were 659 such casualties, 16 of which were fatal; in the year 1939 there were 260, 11 of which were fatal. In the six-year period 1923-1928 the casualty frequency rates for this class of casualties were as follows: per million locomotive miles, 9.47; per million man hours worked, 2061; per 100 million car miles, 49.84. In the five-year period 1935-1939, the corresponding casualty frequency rates were: 7.01 per million locomotive miles, an improvement of 25.98 per cent as compared to the earlier six-year period; 17.61 per million man hours worked, an improvement of 14.56 per cent; and 30.82 per 100 million car miles, an improvement of 38.16 per cent. In 1939 the casualty rates per million man hours and per 100 million car miles (14.21 and 23.34, respectively) were lower than for any prior year of the 17-year period; the rate per million locomotive miles (5.74) was also lower

than for any prior year except 1932, when the rate was almost exactly the same (5.72).

Exhibit 273.

(g) Nevada and Arizona Casualty Statistics:

Tables were received in evidence which included statistics of train and train-service accidents in Arizona reported to the Interstate Commerce Commission. Other exhibits list and furnish the details of each reportable train and train-service accident in Arizona for the 18 years, 1923-1940, inclusive. By the exhibits and the oral testimony explanation [fol. 6206] thereof, as well as oral testimony relating to occurrences not resulting in train or train-service accidents, a clear and complete showing has been made of the defendant's operations in Arizona for 18 years, in so far as they have involved accidents or casualties.

The same showing has been made of train and train-service accidents on defendant's lines in Nevada, for the same period, by statistical tables and a detailed showing of all of those accidents reported by defendant to the Interstate Commerce Commission, including also a few such accidents which were reportable but through inadvertence were not reported. There were no reportable accidents in Arizona that were not reported.

In the sub-findings that follow as well as in those that have preceded it will be understood that when an accident or casualty is referred to, an accident or casualty reportable to the Interstate Commerce Commission is meant, unless otherwise stated.

Sullivan, R. 3673, 3681, 3683.

Exhibit 184.

(1) Propriety and significance of comparison of Nevada-Arizona casualty statistics on defendant's lines:

The physical characteristics of defendant's operations in Nevada, and the volume and character of traffic handled, are described in preceding Findings IIIc and IVc. The operating rules are, and in general have been, the same in both Nevada and Arizona, and operating methods differ only in the respect that since 1912 the defendant has generally observed in Arizona the restrictions of the train-limit law; while in Nevada it has operated its freight and passenger trains without such restrictions, and for some

years (Finding VI-b) has followed the "standard long train method of operation" defined in Finding I(c). The [fol. 6207] requirements of the Nevada Full Crew Law and the Arizona Full Crew Law are substantially the same as to the number of trainmen to be employed on trains in the two states.

See annotations to Proposed Findings III (c), IV (c) VII (a) (5).

The defendant's statistical showing of its operations in Nevada, particularly as related to train accidents and train service accidents, is uncontradicted and, when considered with the evidence as to Arizona train and train-service accidents, affords a fair and reliable basis of comparison between operations as a whole, as well as between a passenger train operation limited to 14 cars, and a freight-train operation limited to 70 cars, exclusive of caboose, and a standard long-train operation, as to the hazard of accident, (1) to passengers; (2) to all employees; (3) to freight-train employees; and (4) to freight-train employees from so-called slack action. It clearly appears that the enforcement of the Arizona Train-Limit Law has not been accompanied by any measurable decrease in so-called slack-action casualties, as compared with the standard long-train method of operation, but has been accompanied by a greater proportion or ratio of casualties to passengers, and to all employees, as well as to freight-train employees, from all causes that lead to train and train-service accidents.

From 1929 to 1940 the operation of long freight trains in and through Nevada has greatly predominated. The year 1923 showed a partial beginning of increase in the length of trains in that State, and it assumed greater proportions each year until 1928. Prior to 1926, the operation of short trains greatly predominated.

[fol. 6208] (2) All classes of employees—all classes of service:

Comparing Nevada and Arizona, as to all casualties to all classes of employees on duty, in all classes of service sustained in train and train-service accidents over the 16 year period from 1923 to 1938, inclusive, the showing is considerably more favorable to Nevada in each of the years when the casualties in absolute number are considered, as well as when they are related to a common basis of measure

ment—the locomotive mile. That is particularly true during the 11 years, 1929 to 1938, inclusive, and 1940. The comparison for the year 1939 would lead to the same result, except that the Nevada casualty rates and totals are greatly distorted because of a derailment of a 14-car passenger train at Harney, Nevada, on August 12, 1939, which was found by the Bureau of Safety of the Interstate Commerce Commission to have been due to malicious tampering with the track, and caused the death of 13 and the injury of 12 employes. During the period 1923 to 1939, all freight trains in Arizona have been restricted by law to 70 cars exclusive of caboose; in Nevada, freight trains of substantially more than 70 cars have greatly predominated since 1929.

Arizona operations show casualty rates, based on the number of train and train-service casualties, to all classes of employes, per million locomotive miles, ranging from 1.2 times higher in 1923, to 4.0 times higher in 1935, and 1.9 times higher in 1940 than the corresponding rates in Nevada. The Arizona rate has been higher in each of the 17 years, 1923-1938, inclusive, and 1940. For the six years 1929-1934 in Nevada, when train lengths were steadily increasing and long trains predominated, the average casualty rate was twice as favorable as in Arizona, where the length of trains, both freight and passenger was restricted by law. For the six years 1935-1940, and despite the distortion due [fol. 6209] to the casualties occurring in the Harney derailment, the Arizona casualty rate was still almost twice (1.86 times) the Nevada rate. The rate of improvement over that period of years has also been more rapid in Nevada than Arizona, the casualty rate on a locomotive-mile basis having improved 46.7 per cent in Nevada, against 38.7 per cent in Arizona, comparing the six-year period 1935-1940 with the six-year period 1923-1928. There were no fatalities to employes on duty in Nevada during 1933, 1934, 1935, or 1938, and only one in 1940; while in Arizona there were: one in 1933, two in 1934, one in 1935, one in 1938, and none in 1940. Considering the 18 years, 1923-1940, inclusive, there were 43 employes on duty killed in Nevada (including 13 killed in the Harney derailment on August 12, 1939), and 33 killed in Arizona; there were 406 employes on duty injured in Nevada, and 968 in Arizona—or 2.4 times as many in Arizona as Nevada; although the locomotive miles during that period were 70,678,000 in Nevada, and 90,734,000 in Arizona. During the six years, 1935 to 1940, inclusive,

there were more than three times as many injured in Arizona as there were in Nevada, although the locomotive miles during that six years were 21,757,000 in Nevada, and 30,970,000 in Arizona.

Sullivan, R. 3688-3691.

Exhibits 274, 275, 276, 289, 290, 391, 392.

(3) All classes of employes—road freight trains:

A comparison between Nevada and Arizona of casualties to all classes of employes on duty, sustained in train and train-service accidents in road freight-train operation for the years 1923 to 1940, inclusive, shows more favorably for Nevada in every year (1) when considered in their absolute number, except in the year 1923, (2) when related to freight-
[fol. 6210] train miles, one of the measures of exposure of employes to injury, or (3) when related to freight-train car miles, a satisfactory and accepted basis for relating casualties to the movement of a given amount of traffic. During that eighteen-year period, there were 17 such employes on duty killed in Nevada, and 20 killed in Arizona. There were 291 such employes on duty injured in Nevada, and 526 in Arizona, or 1.8 times as many in Arizona as in Nevada. During the six years, 1929 to 1934, when the average length of freight trains was continually increasing in Nevada, and trains of substantially more than 70 cars predominated, and with practically no change in Arizona, only four such employes (one of them a conductor on a 67-car train struck by a passenger train) were killed in Nevada, against 5 in Arizona; there were 74 injured in Nevada, and 148 in Arizona—or exactly twice as many in Arizona as in Nevada. During the six years 1935-1940, when long-train operation continued to prevail in Nevada, only three such employes (one a conductor on a 57-car train, killed while on the engine, detached from the train; the second a brakeman on a 70-car train; and the third a section foreman, killed by being struck by a 63-car train) were killed in Nevada, against 5 in Arizona; there were 53 injured in Nevada, and 132 in Arizona, or nearly 2.5 times as many in Arizona as in Nevada.

When these casualties are related to the number of freight-train miles operated, it is found that the casualty rate is higher in Arizona than in Nevada in every year, and reaches a figure three times as great in the year 1931, 2.4 times as great in 1935, and 1.8 times as great in the six years

1935-1940. The comparison is still more favorable to Nevada in every year, when the casualties are related to the freight-train car miles operated. The difference is not so marked in the years 1923 and 1924, when trains of less than [fol. 6211] 70 cars predominated in Nevada and when the average length of trains was less than in Arizona (1923, Nevada 49.47 cars, Arizona 56.45; 1924, Nevada 52.23 cars, Arizona, 55.49; but in the later years, the casualty rate on a freight-train car-mile basis ranged from 1.5 times as great in the year 1933 to 4.1 times as great in 1931; the rate in 1940 being 2.38 times as great in Arizona as in Nevada. The average rate for the six years 1923-1928 was 1.5 times as high; for the 6 years, 1929-1934, 2.1 times as high; and for the 6 years 1935-1940, 2.5 times as high, in Arizona as it was in Nevada. In both states there has been a downward trend in the casualty rate year after year, with some variations in certain years; but the percentage rate of improvement in the casualty rate in later years as against earlier years, both on a train-mile and on a freight-train car-mile basis, is more favorable in Nevada than in Arizona. Comparing the 6 years, 1929-1934, with the 6 years, 1923-1928, the casualty rate per million train miles decreased 43.4 per cent in Nevada against 35.4 per cent in Arizona, and on the basis of 100 million freight-train car miles, the decrease in Nevada was 54.4 per cent, against 38.4 per cent in Arizona. Comparing 1935-1940 with 1923-1938, the improvement on the train-mile basis was, Nevada 61.5 per cent, Arizona 49.2 per cent; on the car-mile basis, Nevada 71.1 per cent, Arizona 52. per cent.

Exhibits 274, 275, 277, 278.

(4) Road freight conductors, brakemen and flagmen:

As to the relative safety in Nevada and Arizona of Road Freight Conductors, Brakemen and Flagmen on duty, the decrease in casualties years after year, in absolute number as well as when related to the freight-train miles and freight-train car miles operated, has been slightly better [fol. 6212] than when all classes of employes on duty killed and injured in road freight-train operation is considered. During the 18-year period 1923 to 1940, inclusive, 11 Road Freight Conductors, Brakemen and Flagmen on duty have been killed in Nevada, and 15 in Arizona, and 257 have been injured in Nevada and 434 in Arizona—or 1.69 times as

many in Arizona as in Nevada; although the freight traffic, measured in freight-train car miles, was almost five per cent greater in Nevada than in Arizona. In every year except 1923, there were more casualties of this type in Arizona than in Nevada. An analysis of the comparisons between Nevada and Arizona for the last 6 years, 1935 to 1940, years of predominant long-train operation in Nevada, shows 2 killed in Nevada, both on short trains, and 5 killed in Arizona, or more than twice as many in Arizona as in Nevada, although the freight-train car miles were 3.8 per cent greater in Nevada than in Arizona. The casualty rate on a train-mile basis is more favorable in Nevada than in Arizona in every year except 1934, where the difference is only .61 (less than one casualty) per million freight-train miles. For the 6 years 1923-1928, the casualty rate on the freight-train mile basis was 1.3 times as high; for the 6 years 1929-1934, it was 1.5 times as high, and for the 6 years 1935-1940 it was 1.6 times as high in Arizona as in Nevada. The comparison between the two states of the casualty rates on the car-mile basis is more favorable to Nevada for every year except 1923, when the average length of trains was greater in Arizona than in Nevada. For the 6 years 1923-1928, the casualty rate on the freight-train car-mile basis was 1.5 times as high; for the 6 years 1929-1934 it was twice as high; and for the 6 years 1935-1940, it was 2.2 times as high in Arizona as in Nevada. The percentage rate of improvement in the casualty rates has been considerably higher in [fol. 6213] Nevada than in Arizona. Comparing the latest 6 years 1935-1940 with the earliest 6 years 1923-1928, the improvement or decrease in the casualty rate on a train-mile basis in Nevada was 58.8 per cent, against 50.3 per cent in Arizona; and on a car-mile basis in Nevada 69.1 per cent, against 53.3 per cent in Arizona.

Exhibits 278, 279.

(5) Slack-action casualties to trainmen, Nevada-Arizona:

Plaintiff bases its contention that the train-limit law is a safety statute almost entirely on the theory that it will minimize or greatly lessen the so-called "slack-action" or "slack-surge" accident—a form of accident classified by the Interstate Commerce Commission as being caused by a shock incident to a sudden starting, stopping, lurch or jerk of the train. Casualties resulting from this type of accident

are confined almost entirely to road freight conductors, brakemen and flagmen on duty, occur most frequently when they are in the caboose, occasionally when on top of the train, and infrequently when they are on the side of a car or caboose, or attempting to board or leave a car or caboose. The train-limit law has been observed long enough, and under such circumstances, as to afford a fair basis for judging whether a law limiting the length of a freight train to 70 cars, exclusive of caboose, can be said to be reasonably effective in the prevention or minimization of slack accidents and incident casualties. It clearly appears, and it is hereby found, that said law has not had that effect in Arizona, as to the defendant's freight-train operations in that state, either when they alone are considered, or when they are compared with defendant's freight-train operations in Nevada.

There is in evidence a reliable statistical comparison of defendant's freight-train operations as between the states [fol. 6214] of Nevada and Arizona, and as to the occurrence of "slack-action" casualties, for the 18-year period, 1923-1940, inclusive.

Considering the casualties in their absolute number during that period, there were more on short trains, in Arizona, than there were on long trains in Nevada; there being 101 such casualties, including one killed, on short trains, in Arizona, and 94 casualties, none of whom were killed, on long trains in Nevada. Analyzing the combined total number of this particular type of casualty occurring in both states, it is shown that there were 125 such short-train casualties; 101 in Arizona and 24 in Nevada (including 2 killed, one in Arizona and one in Nevada); against 96 such long-train casualties (none fatal), 94 in Nevada and 2 in Arizona; or 31 per cent more casualties on short trains than on long trains. During the 12 years 1929-1940, inclusive, there were 61 casualties of this type in Nevada and 62 in Arizona, although the traffic measured in freight-train car miles was 5 per cent greater in Nevada.

This type of casualty is of comparatively infrequent occurrence. There were no reportable casualties from "slack" and "slack-surge" accidents in Nevada during the eleven months, October 13, 1930, to September 20, 1931; none during the six months December 18, 1932, to June 22, 1933; none during the five months, March 1, 1935 to August

12, 1935; none during the five months January 11 to June 21, 1937; none during the 11 months, December 6, 1937 to November 17, 1938; none during the eight months February 14 to October 10, 1939. There was but one reportable slack or slack-surge accident to a conductor, brakeman, or flagman on Defendant's lines in Nevada during the period of almost two years from October 13, 1930, to July 13, 1932. In Arizona there were no such casualties during the seven months from May 29 to December 28, 1932; none during the [fol. 6215] thirteen months from October 29, 1933, to November 26, 1934; none during the twelve months from July 20, 1935, to July 5, 1936; none during the six months from December 25, 1937, to June 16, 1938; and none during the ten months from August 6, 1938, to June 1, 1939. There was only one such casualty in Arizona during the period of sixteen and one-half months from October 29, 1933 to March 9, 1935.

Another index of infrequency is the high percentage of days in the year when no accidents of this type causing casualties have occurred. In Nevada there were 359 such days in 1929; 358 in 1930; 364 in 1931; 361 in each of 1932, 1933, 1934, 1936 and 1937; 362 in each of 1935, 1939, and 1940; and 363 in 1938. Reduced to a percentage basis, it thus appears that on about 98.9 per cent of the days of the twelve-year period 1929-1940, no casualties of this class occurred in Nevada. In Arizona there were 360 such days in 1929; 354 in 1930; 357 in 1931; 362 in 1932; 361 in 1933, 1935 and 1939; 364 in 1934; 363 in 1936 and 1938; 358 in 1937, and 365 in 1940. On a percentage basis, there were about 98.8 per cent of the days during the twelve-year period, upon which no casualties of this class occurred in Arizona.

The casualty rate for said type of accident, on either a train-mile basis or car-mile basis for any one year, fluctuates greatly on account of the relatively small number of such accidents, and the infrequency with which they occur; for example, the casualty rate, on a train-mile basis, for the year 1939, was 1.65 in Nevada, and 1.56 in Arizona, a difference of only .09 casualty per million train miles in favor of Arizona. However, on a car-mile basis of comparison, the difference of .72 casualty per 100 million freight-train car miles (Nevada, 2.08, and Arizona, 2.80) is more favorable to Nevada.

[fol. 6216] Comparing the six years, 1935-1940, inclusive, with the earlier six years, 1923-1928, inclusive, there has

been a decrease of 30 casualties of this type in Nevada, and a decrease of 17 casualties in Arizona. On a train-mile basis, previously described as one of the commonly used measures of exposure of employes to injury, the casualty rates show a 43.3 per cent improvement in Nevada, and 44.6 per cent improvement in Arizona. On a freight-train car-mile basis, a recognized and proper measure of the casualty frequency against volume of traffic moved, the decrease in Nevada was 57.5 per cent, and in Arizona 47.7 per cent. For the 12 years, 1923-1934, inclusive, when short-train operations predominated for the earlier years, and the length of trains was steadily increasing until the operation of long trains became predominant in the later 6 years in Nevada, the average casualty rate, per million train miles was only slightly higher: .91 casualty (less than one) more, in Nevada than in Arizona; and per hundred million car miles the Nevada rate was .47 casualty less. When the comparison between Nevada and Arizona is confined to the 6 years, 1935-1940, inclusive, the casualty rate, based on the number of freight-train car miles operated, is less favorable in Nevada than Arizona, by but .24 (less than one-fourth casualty) per 100 million car miles.

The findings in this paragraph as well as the other evidence on the subject support the conclusion of fact, which is hereby adopted, that the "slack" or "slack-surge" accident is clearly shown to be a minor factor in determining whether the train-limit law here considered is a reasonable exercise of the state's police power.

Sullivan, R. 4023-4024.

Exhibits 274, 275, 280.

[fol. 6217] (6) Caretakers in cabooses—Nevada-Arizona:

Persons carried under contract in freight-train cabooses are usually livestock caretakers and messengers accompanying banana and other perishable shipments. In Nevada, during the 17-year period 1923-1939, there was one such casualty—a caretaker was injured in 1925, while walking over the top of a 54-car train; but no one was injured from slack action. During the same period there were 11 of such persons injured in Arizona on short trains, six of them by slack action on trains of 70 cars or less.

Sullivan, R. 3738-3743.

Exhibit 285.

(7) Serious casualties—Nevada-Arizona:

Comparing the freight-train operations in the two states for the period 1923-1939, as to their production of fatalities or amputation of limbs of freight conductors, brakemen and flagmen in train and train-service operations, it is found that there were, in Nevada, eleven deaths and four amputations, none of which occurred on a long train, except one amputation; while during the same period in Arizona there were nineteen deaths and four amputations, all of which occurred on short freight trains. Slack action was assigned as the cause of one death in Nevada, on a 60-car train, and one amputation. That cause was assigned for one death in Arizona on a 64-car train, and one subsequent fatality on a 66-car train; no amputation.

Exhibits 274, 275, 281.

(8) Casualties classified—Nevada-Arizona:

In further confirmation of the creation of additional hazard to road freight conductors, brakemen and flagmen [fol. 6218] by operating more train units than are necessary to carry a given amount of freight traffic the evidence shows:

Road Freight-train Operation

Casualties to Road Freight Conductors, Brakemen and Flagmen

Period	Total casualties		Operating hand brakes		Getting on or off cars or locomotives		Miscellaneous train accidents and miscellaneous train-service accidents	
	Ne- vada	Ari- zona	Ne- vada	Ari- zona	Ne- vada	Ari- zona	Ne- vada	Ari- zona
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1923-1928	151	214	5	24	30	47	98	130
1929-1934	65	123	1	12	6	26	49	79
1935-1940	52	112	4	16	9	27	35	61
Totals, 18 years....	268	449	10	52	45	100	182	270

The classifications of causes are those used by the Interstate Commerce Commission in its Rules for Reporting Accidents. "Operating hand brakes" and "Getting on or off cars or locomotives" are directly related to the number of train units operated. "Miscellaneous train acci-

dents" and "Miscellaneous Train Service Accidents" include practically all of the so-called "slack-action" accidents. The "casualties" shown in cols. (4) to (9) inclusive, included 5 deaths in Nevada in the first period, none in the second, and one in the third; and 4 deaths in Arizona in the first period, 2 in the second, and 3 in the third; in Nevada one death on a 60-car train, and in Arizona one death on a 66-car train and one on a 64-car train resulted from slack-action accidents.

Sullivan, R. 3695-3697, 3596.

Exhibits 274, 275, 278, 279.

[fol. 6219] (9) Derailments reportable as train accidents—
Nevada-Arizona.

The claim is made by plaintiff that the law under review tends to minimize derailments caused by defects in or failure of equipment, and consequent damage to equipment and hazard to life and limb. By comparing the derailments in Arizona and Nevada, during the 18-year period 1923-1940, reported to the Interstate Commerce Commission as having been caused by defects in or failures of freight-car equipment, it is found that the following appears:

Derailments Caused by Defects in or Failures of Freight-Car Equipment

A Period	B Number		C Damage to property	
	Nevada	Arizona	Nevada	Arizona
1923-1928	37	58	\$40,096	\$120,839
1929-1934	15	21	10,879	38,946
1935-1940	18	27	51,673	42,616
Total, 18 years 1923-1940.....	70	106	102,648	202,401

D Per million train miles				
1923-1928	2.80	4.09	\$3,038	\$8,513
1929-1934	1.43	1.60	1,941	2,963
1935-1940	1.63	1.81	4,623	3,849
Total, 18 years 1923-1940.....	2.02	2.51	2,941	4,785

E Per 100 million car miles				
1923-1928	4.79	7.85	\$5,193	\$16,354
1929-1934	1.97	2.93	1,432	5,436
1935-1940	2.09	3.26	5,938	5,147
Total, 18 years 1923-1940.....	2.93	4.64	4,266	8,864

[fol. 6220] Whatever effect improvements in track, road-bed, cars and appurtenances may have had during those years in lessening the hazard of derailment has been experienced equally in both states.

Of the 70 derailments in Nevada, 35 occurred on long trains and 35 on short trains—which results in there having been 141 of the 176 derailments in both states—1923-1940—chargeable to defects in or failure of freight-car equipment on short trains, as against 35 on long trains.

In 1935 there were no reportable derailments in Nevada from these causes, although 1,596,000 freight-train miles and 123,508,000 freight-train car miles were operated. In Arizona there were 3 reportable derailments with an aggregate damage of \$12,274, but with no casualties; the accident rate and amount of damage being 1.43 (\$5,845) and 2.53 (\$10,353) on the basis of one million freight-train miles and one hundred million freight-train car miles respectively.

Sullivan, R. 5129-5132.

Exhibits 286, 287, 288, 389.

(h) Comparison of Short and Long-Train Periods in Nevada with Each Other.

From the evidence it clearly appears that there has been a marked improvement during the 18 years, 1923-1940, inclusive, in the rate of casualties of employes engaged in road freight-train operation in Nevada, coincident with the increase in the length of freight trains hereinbefore found.

An exhibit was received based on reportable casualties to all classes of employes on duty in train and train-service accidents resulting from the operation of road freight trains, and covering two periods: (a) The three years, 1923, [fol. 6221] 1924 and 1925, when short freight-train operation was predominant, the average during those years being 52.73 cars per train, and (b) the years 1937, 1938 and 1939, when long-train operation was predominant, the freight trains averaging 78.06 cars per train. In the first period, while 6,556,000 freight-train miles were operated, 345,672,000 freight-car miles were made by cars in those trains. In the second period, due to the increase in the length of trains, the total freight-train miles dropped to 5,468,000, while the freight-train car miles increased to 426,822,000, a lesser number of trains handling a greater

number of cars. During the first period there were five deaths, four of them of brakemen while working on trains of less than 55 cars, and one of them a railroad police officer who fell from a 60-car train. In the first period there were 106 reportable injuries to train and enginemen, 96 of which were to freight conductors, brakemen and flagmen; there were also three other employees injured. In the second period there was one death where a conductor of a 57-car train fell from the gangway of the moving engine, which was detached from the train; there were 31 train and enginemen injured, of whom 28 were freight conductors, brakemen and flagmen, and there was one other employee injured. The total casualties for the two periods were 114 in the first period, and 33 in the second; as stated, in the second period a lesser number of train miles produced a greater number of car miles than in the first period.

On recognized bases for measuring frequency of casualties: the first period produced 16.71 per million locomotive miles, or 2.88 times as many as the 5.81 that were produced during the second period; in the first period there were 17.39 casualties per million train miles, or 2.88 times as many as the 6.04 in the second period. In the first period, per hundred million freight-car miles, there were 32.98 casualties, or 4.27 times as many as the 7.73 produced in [fol. 6222] the second period. On a percentage basis, the improvement in the second period over the first was, per million locomotive miles, 65.23 per cent; per million train miles, 65.27 per cent; and per hundred million freight-car miles, 76.56 per cent.

Sullivan, R. 3730-3731.

Exhibits 275, 277, 282.

(1) Comparison, Nevada with Arizona—three-year periods.

It is also contended by plaintiff that decreases in casualty rates are to be credited to improvements in roadbed, bridges, equipment, etc. hereinbefore described. As hereinbefore found those improvements, as well as operating rules, operating conditions, and character of traffic, during the years 1923-1940, were practically the same on defendant's lines in both Nevada and Arizona, the only fundamental difference between the two states being that created by the restrictions of the Arizona Train-Limit Law. While

the factors claimed by plaintiff to account for improvement in casualty rates have, no doubt, increased the safety of operation of all classes of trains, the evidence clearly shows—comparing defendant's Nevada and Arizona operations—that the improvement in casualty rates is only partly due to improvements in road and equipment. Comparing total casualties and casualty rates for the two states, for the three-year periods 1923-1925 and 1938-1940, the following comparisons are established:

[fol. 6223] Casualties—Road Freight Trains—All Employees on Duty—Train and Train Service Accidents

A. Period	B. Average length freight trains		C. Casualties		D. Per million train miles		E. Per 100 million car miles	
	Ne- vada	Arl- zona	Ne- vada	Arl- zona	Ne- vada	Arl- zona	Ne- vada	Arl- zona
(1) 1923-1925	52.73	53.88	114	133	17.39	22.75	32.98	42.22
(2) 1938-1940	79.88	56.19	27	58	4.90	7.60	6.14	13.33
Ratio					3.55	2.99	5.37	3.12
Improvement %, comparing line (1) with line (2)					71.82	66.59	81.38	67.96

The table next above clearly shows that the standard long-train operation on Defendant's lines in Nevada is a safer operation, when all classes of employees employed in or subject to injury by road freight-train service are considered, than the restricted operation in Arizona.

That conclusion is borne out by a comparison of the statistics of train and train-service accidents occurring on the defendant's line in the states of Nevada, New Mexico, and on the Los Angeles Division, California, as well as by the experience of the Atchison, Topeka & Santa Fe Railway, as summarized in Finding XII(k) hereof, and that of the Chesapeake & Ohio Railway summarized in Finding XII(l) hereof.

The act under review purports to be in the interest of safety of all employees, not of the protection of one class of employees from the hazard of one class of accidents.

Exhibits 277-282.

(See, also, proposed Findings III(c), IV(c), VII(a) (5).)

[fol. 6224] (i) Casualty Statistics — Defendant's Los Angeles Division.

Defendant introduced in evidence an exhibit listing all of the reportable casualties sustained by employes on duty and by non-trespassers (i.e., all persons other than trespassers) in train and train-service accidents occurring upon or in connection with the operation of road freight trains upon defendant's Los Angeles Division, during the 11-year period 1930-1940; said exhibit showing also the number and rate of occurrence of such casualties, both by classes of persons and by years.

Plaintiff introduced a list of freight-train accidents occurring on the Los Angeles Division, but made certain errors in its compilation, and failed to offer any other related statistical showing in connection therewith. Except for said errors, plaintiff's said showing confirms substantially the testimony submitted by defendant.

During the 11 years 1930-1940, there were 460 accidents on the Los Angeles Division, which occurred in connection with the operation of road freight trains and involved reportable casualties to employes and other non-trespassers. Fifty persons were killed in these accidents, 11 of whom were employes; and 504 persons were injured, 291 of whom were employes; or a total of 302 casualties to employes and 252 casualties to non-trespassers; 236 of said non-trespasser casualties were sustained by occupants of motor vehicles, 38 of such persons being killed and 198 injured.

The average length of all freight trains, both main and branch line, operated on the Los Angeles Division during the 11-year period 1930-1940 was 55.13 cars. The corresponding figure for Arizona for the same period was 55.33 cars; for Nevada 76.58 cars. The record does not show [fol. 6225] the proportion of long trains to all trains run on the Los Angeles Division, during the 11-year period 1930-1940. It does appear, however, that approximately 25.8 per cent of the trains run on certain main lines of that division, during four typical months of 1939, were long trains.

Of the total of 302 employe casualties above referred to, 189 (or 62.6 per cent) occurred on short trains, and 113 (or 37.4 per cent) on long trains. Of the total of 252 non-employe casualties above referred to, 228 (or 90.5 per cent) occurred on or in connection with the operation of short

trains, and only 24, or 9.5 per cent, on long trains. During the 5-year period 1936-1940 there were 167 employe casualties, of which 112, or 67.1 per cent, occurred on short trains; and there were 140 non-employe casualties, of which 127, or 90.7 per cent, occurred on short trains. Of the total of 554 casualties which were sustained during the 11 years 1930-1940 by persons other than trespassers, as aforesaid, 417, or 75.3 per cent, occurred upon or in connection with short trains, and only 137, or ~~24.7~~ per cent, on long trains; while during the 5 years 1936-1940, out of a total of 307 such casualties, 239, or 77.8 per cent, were on or in connection with short trains, and only 68, or 22.2 per cent, on long trains.

Of the 236 casualties sustained by occupants of motor vehicles during said 11-year period, 215 or 91.1 per cent, were sustained in connection with the operation of short trains, and only 21, or 8.9 per cent, in connection with the operation of long trains.

There is no sufficient showing to enable direct comparisons to be made between the Los Angeles Division, on the one hand, and either Arizona or Nevada, on the other, as to either the total number or the frequency rates of accidents and casualties occurring in freight-train operation. Any such comparisons, in so far as they involve casualties [fol. 6226] to employes, and particularly those sustained by conductors and brakemen on duty, are further disturbed and rendered inaccurate by reason of the fact that the requirements of the Full-Crew Law of California compel the employment of substantially more brakemen, particularly on long trains, than in Arizona or Nevada, and thus cause many more employes to be exposed to the hazard of injury in the event of accidents to such trains.

It appears, from the accident and casualty showing for the Los Angeles Division, and it is hereby found, that from the standpoint of the safety of persons, including employes on duty and the general public (other than trespassers), there is no especial or unusual hazard produced by or associated with the operation of long freight trains on that division, that is not also produced by or associated with the operation of short trains thereon, or that such hazards as do exist would be in any degree or to any extent reduced or eliminated if all trains were short.

Sullivan, R. 3998-3999.

Exhibits 185, 277, 351 to 361, 365, 386.

(j) Accident and Casualty Statistics—Defendant's Lines in New Mexico.

(1) Casualties to Persons—Freight-train operation.

Defendant introduced an exhibit containing a list of all of the accidents occurring in road freight-train operation on its lines in New Mexico, during the 11 years 1930-1940, in which reportable casualties were sustained by employes, or other persons not including trespassers. This exhibit also shows both the absolute number, and the frequency rates of such casualties, by years and groups of years, and by classes of persons involved, and also the casualties occurring upon or in connection with short-train and long-train operations, respectively.

[fol. 6227] Plaintiff introduced certain exhibits listing and describing in detail the reportable freight-train accidents and casualties occurring on defendant's New Mexico lines during the period above referred to; but plaintiff's compilation contains certain errors, and moreover was not accompanied by or related to any statistical showing. Plaintiff's evidence relative to New Mexico freight-train casualties, except for the errors above mentioned, tends to confirm and corroborate the showing made by defendant.

During said 11-year period 1930-1940, there were 139 accidents involving reportable casualties to persons other than trespassers, which occurred on or in connection with the operation of road freight trains on defendant's lines in New Mexico. Said 139 accidents resulted in 145 casualties, one person being killed and 144 injured. 129 employes were injured, but none was killed. 15 non-trespassers were injured and one was killed. 11 of said non-trespasser casualties, including the one fatality, were sustained by occupants of motor vehicles.

Of said total of 145 casualties, 111, or 76.5 per cent, were sustained in connection with the operation of short trains; 34, or 23.5 per cent, in connection with the operation of long trains; of the 70 such casualties which occurred during the 5 years 1936-1940, 55, or 78.6 per cent, were on short trains; and 15, or 21.4 per cent, were on long trains.

The record indicates that during four typical months of the year 1939, long trains constituted 9.06 per cent of all the freight trains operated on defendant's main lines in New Mexico. It also appears that during the first six

months of 1940, 25.5 per cent of the trains operated on the main line between Lordsburg and El Paso were long trains. The average length of all freight trains, both main and branch line, operated in New Mexico during the 11 years [fol. 6228] 1930-1940 was 55.19 cars; as compared to average lengths, during the same period, of 55.03 cars in Arizona and of 76.58 cars in Nevada.

Of the total of 129 employe casualties above referred to, 98, or 75.9 per cent, were on short trains; and during the 5-year period 1936-1940, 49 out of 61 casualties, or 80.3 per cent, were on short trains. Of the 16 casualties to non-trespassers other than employes, which occurred during the 11-year period 1930-1940, 13 occurred in conjunction with short-train operation. The 3 casualties sustained in connection with long-train operation all occurred at one time and in one accident, when an automobile ran into the side of an 89-car train, which at the time was moving at a speed of four miles per hour.

Casualties to employes, occurring in freight-train operation in New Mexico, are and have been substantially less in both number and frequency than in Arizona, although generally somewhat more frequent, in relation to train miles operated or car miles produced, than in Nevada. Thus, in said 11-year period, there were the following numbers and frequency rates of casualties to all classes of employes on duty sustained in train and train-service accidents occurring in road freight-train operation in said three states: in New Mexico, 129, at the rate of 7.97 per million train miles, 12.84 per 100 million car miles; in Arizona, 251, at the rates of 10.03 per million train miles and 18.10 per 100 million car miles; in Nevada, 113, at the rates of 5.89 per million train miles and 7.69 per 100 million car miles.

Considering only casualties to road freight conductors and brakemen on duty, there were, during said 11-year period, in New Mexico, 92 such casualties (67 of which occurred on short trains), at the rates of 5.05 per million train [fol. 6229] miles and 9.16 per 100 million car miles; whereas in Arizona there were 203 such casualties, at the rates of 8.11 per million train miles and 14.66 per 100 million car miles; and in Nevada, 101 such casualties, at the rates of 5.26 per million train miles and 6.87 per 100 million car miles.

Considering only casualties to road freight conductors and brakemen, caused from sudden stopping, starting, lurch, and jerk of train, there were, during said period, 29 such casualties in New Mexico, 11 of which occurred on short trains, the frequency rates being 1.59 per million train miles, and 2.89 per 100 million car miles; whereas there were in Arizona, during said 11 years, 56 such casualties, the rates being 2.24 per million train miles and 4.04 per 100 million car miles; and in Nevada, 52 casualties, the rates being 2.71 per million train miles and 3.54 per 100 million car miles.

Exhibits 185, 277, 279, 280, 338, 364, 387, 397.

(2) Train accidents—Freight-train operation.

Defendant also submitted an exhibit showing, by number and in detail, the reportable train accidents occurring upon or in connection with the operation of road freight trains upon its lines in New Mexico during the 11 years 1930-1940, and showing also the frequency of such accidents in the aggregate and by classes. There were 120 such train accidents occurring during said 11-year period. Only one of said accidents involved a casualty: a brakeman on a 60-car train was injured when 8 cars of the train were derailed by a broken flange on one of the cars.

The frequency rates of such New Mexico train accidents were: 6.59 per million train miles, and 11.95 per 100 million car miles. In Arizona, during the same 11-year period, [fol. 6230] there were 232 such train accidents, and the frequency rates were: 9.24 per million train miles, and 16.72 per 100 million car miles. In Nevada, during the same period, there were 133 such accidents, and the frequency rates were: 6.94 per million train miles and 9.05 per 100 million car miles.

12 of said New Mexico train accidents were collisions, all of them involving short trains, and all being ascribed to the negligence of employees. 46 of said train accidents were derailments; 39 occurred on short trains, and only 7 on long trains. 29 of said derailments were due to defects in or failures of cars or car bodies, 23 occurring on short trains and 6 on long trains. 48 of said train accidents were classed as locomotive accidents, 41 occurring on short trains and 7 on long trains. The remaining 14 accidents were miscellaneous train accidents, 6 occurring on short trains

and 8 on long trains. 98, or 81.7 per cent, of said 120 train accidents occurred on short trains; and only 22, or 18.3 per cent, on long trains.

Exhibits 280, 289, 290, 340 to 349, 388.

(3) Passenger-train accidents and casualties.

Plaintiff introduced in evidence a list of casualties to passengers and passenger employes occurring in train and train-service accidents on defendant's lines in New Mexico, but did not offer any statistical showing in connection therewith. Only two of the accidents thus listed by plaintiff occurred on long passenger trains; in one case a brakeman on a 16-car train sustained eight days' disability because of a foreign object in his eye; and in the other a passenger on a 15-car train suffered a probable 21-day disability, when he lost his hand hold and fell from an upper berth while the train was standing.

[fol. 6231] It does not appear that the length of the train had anything to do with any accident or casualty occurring in passenger-train operation on defendant's lines in New Mexico during the period covered by plaintiff's showing.

Exhibits 362, 368.

(k) Santa Fe Casualty Statistics—Comparing Short-train and Long-train Operations.

As part of its system operations the Atchison, Topeka & Santa Fe Railway Company operates a standard steam railway from Los Angeles, California to Chicago, Illinois, which passes through Needles, California, 12 miles west of the Arizona line, Winslow, Arizona, and Gallup, Belen and Clovis, New Mexico. The distance from Needles to Gallup is 419.7 miles, 385.7 of which are through Arizona, and from Gallup, through Belen, to Clovis, is 383.9 miles. The character of freight traffic and equipment handled through Arizona and New Mexico on that main line is substantially the same as that handled by defendant through Arizona and New Mexico, through interstate freight traffic greatly preponderating. That railroad has observed the train-limit law, the effect of which is to control the length of freight trains in both directions between Needles and Gallup, the nearest freight-train terminal east of Arizona (22 miles from the state line), and to shorten the length of east bound freight trains between Gallup and Belen (a freight-train terminal)

a distance of 144 miles. Between Belen and Clovis (a freight-train terminal), a distance of 240 miles, standard long freight-train operation is predominant, and has been for a number of years. There is no New Mexico state law that limits the length of freight trains. The evidence shows an exclusively short-train operation between Needles and Gallup (419.7 miles), a standard long-train operation between Gallup and Belen (144 miles) somewhat modified as [fol. 6232] to eastbound freight trains by the effect of the Arizona law, and an unrestricted and unmodified standard long-train operation between Belen and Clovis (240 miles).

Casualties on the above portions of the Santa Fe lines, resulting to road freight trainmen and enginemen on duty, from the operation of through, local and mixed road freight trains, and occurring while on, or getting on or off, road freight trains, as such casualties were reported to the Interstate Commerce Commission by the carrier, and their relation to train and car miles are found to be:

Period	Average Number cars per train		Casualties					
			Enginemen		Trainmen		Total	
	Clovis- Gallup	Gallup- Needles	Clovis- Gallup	Gallup- Needles	Clovis- Gallup	Gallup- Needles	Clovis- Gallup	Gallup- Needles
6 yrs. 1923-1928	69.7	52.4	15	9	44	97	59	106
6 yrs. 1929-1934	73.5	56.8	5	11	29	55	34	66
5 yrs. 1935-1939	69.2	55.6	8	5	18	42	26	47
17 years 1923-1939	70.8	54.8	28	25	91	194	119	219

Frequency of Casualties

Period	Per million freight-train miles		Per 100 million freight-car miles	
	Clovis- Gallup	Gallup- Needles	Clovis- Gallup	Gallup- Needles
6 yrs. 1923-1928	8.19	10.15	11.75	19.36
6 yrs. 1929-1934	5.85	7.72	7.92	13.60
5 yrs. 1935-1939	4.21	5.40	6.07	9.71
17 years 1923-1939	6.20	7.91	8.75	14.44

[fol. 6233] There were two deaths (due to a locomotive boiler explosion) on a long train, and 11 deaths from accidents on short trains; none was due to slack action. The character and extent of operation in the two districts is illustrated by a comparison of the traffic movements in the

first year, 1923, with the peak year, 1929, and the last year, 1939, as follows:

Year and Territory	Average cars per train	Freight-train miles (thousands)	Freight-car miles (thousands)
1923			
Gallup-Clovis	64.76	1,175	76,115
Needles-Gallup	44.96	1,961	88,156
1929			
Gallup-Clovis	72.69	1,309	95,156
Needles-Gallup	57.06	1,794	102,366
1939			
Gallup-Clovis	71.7	1,251	89,761
Needles-Gallup	56.2	1,755	98,712

All reportable casualties due to sudden stop, start, lurch or jerk of the trains described in the heading of the table are included in its description of the casualties it covers.

This evidence shows, and it is hereby found, that over a period of 18 years the casualty frequency to road freight trainmen and enginemen on duty, while on or getting on or off road freight trains has been less favorable on the train-mile basis and substantially less favorable on the car-mile basis in Arizona where trains have operated under the restrictions of the law, than in the immediately adjacent territory of New Mexico where train length is unrestricted and where conditions of operation and volume of [fol. 6234] traffic are greatly similar, the only dissimilarity being in the length of trains.

J. P. McDonald, R. 1752-1758, 1760-1761; *Mahoney*,

R. 1847-1849, 1851-1852, 1856-1858, 1876-1880.

Exhibits 124, 126, 132, 133, 134, 138, 140, 153, 296, 300.

(1) Chesapeake and Ohio Railway—Casualty Statistics

The Chesapeake and Ohio Railway is a Class I railroad of 3,117 miles of road operating in the states of Virginia, West Virginia, Kentucky, Ohio, Indiana and Illinois, and the District of Columbia. The railroad consists of both heavy or mountainous grade and relatively light or water grade, the heavier grades varying from 1.5% to 2.67%. A large proportion of the mileage consists of double track, and the main lines are equipped with block signals, most of which are automatic signals although there are some manual block signals; a portion of the automatic block signal territory has the additional protection of automatic train control.

Depending upon the character and availability of traffic, facilities, and grade conditions, both long and short trains

are operated. However, long trains greatly preponderate on the main-line subdivisions. During a typical four-week period of the year 1939, out of 3200 freight trains operated on seven main-line subdivisions, 2843, or 88 per cent, were long trains, and 1,722, or 53.8 per cent, consisted of 141 cars or more. The operation of freight trains of 160 cars is a common practice on this railroad.

The system freight operations of the Chesapeake and Ohio were large, and the increase in freight-train lengths progressive and pronounced, from 1924 to 1938, as during the same period the reductions in accidents and casualties [fol. 6235] to employees were also continuous and substantial, as shown by the following tables (the 1938 statistics being the latest available from the published reports of the Interstate Commerce Commission at the time the witnesses from the Chesapeake and Ohio testified):

Year	Freight Revenue Ton miles (millions)	Average Freight Cars Per Train
1924	16,527	53.5
1928	21,183	61.7
1934	17,613	77.3
1938	16,054	77.3

Years	Total Casualties		Casualty Rates Per Million Car miles	
	All Employees	Trainmen & Enginemen	All Employees	Trainmen & Enginemen
1924-27	2281	1974	61	55
1928-31	1250	1070	34	30
1932-35	723	613	24	22
1936-38	495	424	20	18
Improvement, 1936-38, compared with 1924-27			62.21%	67.27%

During the period 1924 to 1938 there was, in particular, a continuous and substantial reduction in the number and frequency of derailments due to various causes, including particularly those due to defects in or failures of equipment, as shown by the following table:

Years	Derailments			Frequency of Derailments	
	All Causes	Due to Negligence of Employees	Due to Defects in or Failures of Equipment	Per 100,000 Train miles	Per 1,000,000 Car miles
1924-27	1,554	200	570	1.68	.42
1928-31	723	109	346	.87	.19
1932-35	316	52	142	.55	.11
1936-38	209	35	89	.47	.08
Improvement, 1936-38, compared with 1924-27				72.0%	81.0%

Beale, R. 1548, 1557-1580.

Exhibits 116, 117, 118, 121, 122, 123.

[fol. 6236] (m) Decrease in Casualties — Nevada Compared with Arizona

Coincident with the increase, as hereinbefore found in Finding VII (b), in the percentage of long freight trains operated in Nevada, there has been a continuous and marked decrease in reportable casualties in train and train-service accidents resulting from the operation of road freight trains. The evidence of those casualties in Nevada for the eighteen years 1923-1940 is complete. During the same eighteen-year period in Arizona, which is also fully covered by evidence showing all of the same classes of accidents and casualties in that state, and also showing that the average and maximum train lengths, as hereinbefore found, remained relatively constant, the decrease in the casualties in train and train-service accidents resulting from the operation of road freight trains has been much smaller than in Nevada.

Considering said eighteen years in three periods, the first consisting of the six years 1923-1928, the second of the six years 1929-1934, and the third of the six years 1935-1940, the following is shown by the record:

All Classes of Employees on Duty;

Road Freight Train Operation:

	Rates per million train miles		Rates per 100 million car miles	
	Nevada	Arizona	Nevada	Arizona
1923-1928	13 18	18 03	22 54	34 65
1929-1934	7 46	11 64	10 27	21 35
1935-1940	5 07	9 16	6 52	16 54
Improvement, 1929-34 compared with 1923-28	43 4%	35 4%	54 4%	38 4%
Improvement, 1935-40 compared with 1923-28	61 5%	49 2%	71 1%	52 3%

[fol. 6237]

Road Freight Conductors, Brakemen, and Flagmen on Duty

	Rates per million train miles		Rates per 100 million car miles	
	Nevada	Arizona	Nevada	Arizona
1923-28	11 44	15 07	19 56	28 96
1929-34	6 22	9 36	8 56	17 17
1935-40	4 71	7 49	6 05	13 53
Improvement, 1929-34 compared with 1923-28	45 6%	37 9%	56 2%	40 7%
Improvement, 1935-40 compared with 1923-28	58 8%	50 3%	69 1%	53 3%

Road Freight Conductors, Brakemen and Flagmen on Duty, Caused From Sudden Starting, Stopping, Lurch or Jerk of Train

	Rates per million train miles		Rates per 100 million car miles	
	Nevada	Arizona	Nevada	Arizona
1923-28	4.32	2.89	7.38	5.55
1929-34	3.25	2.89	4.48	5.30
1935-40	2.45	1.60	3.14	2.90
Improvement, 1929-34 compared with 1923-28	24.8%	—	39.3%	4.5%
Improvement, 1935-40 compared with 1923-28	43.3%	44.6%	57.5%	47.7%

Exhibits 277, 279, 280.

(n) Casualties While Train Standing.

Not all casualties in train and train-service accidents occur while trains are in motion. Of the 308 reportable casualties in Nevada sustained by all classes of employees on duty in train and train-service accidents in road freight-train operation during the 18 years 1923-40, 73, or 23.7 per cent, occurred while the trains were standing; and 53 of the 73 occurred on short trains. Of the 546 reportable [fol. 6238] casualties in Arizona, similarly sustained by all classes of defendant's employees on duty in train and train-service accidents in road freight-train operation, 177, or 32.4 per cent, occurred while the trains were standing. All were on short trains.

Of the 109 casualties sustained in train and train-service accidents by all persons (other than trespassers) while on or getting on or off passenger trains on defendant's lines in Nevada during the 17 years 1923-39, 18, or 16.5 per cent, occurred while the trains were standing. Of the 239 corresponding casualties occurring in Arizona during the same 17-year period, 77, or 32.2 per cent, occurred while the trains were standing.

Casualties occurring while trains are standing are closely related to the number of trains operated, but have no relation to the length of the train. An unnecessary increase in the number of trains operated, either freight or passenger or both, increases the hazard of all those classes of casualties which take place while trains are standing. It is hereby found that the train-limit law, by causing such unnecessary increase in the number of trains operated, increases the hazard of casualties occurring while trains are standing, both in absolute number, and in proportion to all

casualties sustained in train and train-service accidents.

Exhibits 274, 275, 277, 291, 292.

(a) Passenger-train Safety:

(1) Passenger Casualties—Class I Railroads of the United States.

Under the rules of the Interstate Commerce Commission governing the reporting of accidents, the death of a passenger in a train or train-service accident is always reportable [fol. 6239] able, and an injury to a passenger is reportable if sufficient to incapacitate the injured person from following his customary vocation or mode of living for a period of more than one day.

The published statistics of the Commission relating to casualties to passengers in train and train-service accidents, Class I railroads of the United States, for the years 1923-1939, inclusive, show that during that period the number of passengers killed decreased from 102 in 1923 to 27 in 1939, and the number of passengers injured, from 5,538 in 1923 to 2,489 in 1939. The number of revenue passengers carried decreased during that period from about 987,000,000 in 1923 to about 451,000,000 in 1939; and the number of passengers carried one mile from about 38,000,000,000 in 1923 to about 22,500,000,000 in 1939. On a frequency basis the rates are exceedingly small. In the six-year period 1923-1928, the frequency of casualties per million passengers carried was 5.16. In the five years 1935-1939, it was 5.0: an improvement of 3.10 per cent. In the first period the frequency of casualties per 100 million passenger miles was 12.91, and in the second period, 10.63, an improvement of 17.66 per cent.

The 1935-1939 casualty rate of 10.63 casualties per hundred million passenger miles was equivalent to a passenger travelling about 9,407,000 miles for each reportable casualty.

Sullivan, R. 3611-3613.

Exhibit 267.

(2) Passenger Casualties—Nevada and Arizona.

During the seventeen-year period 1923-1939 defendant has operated its passenger trains in Arizona in units of not more than 14 cars, as required by the train-limit law. In

Nevada, on the other hand, defendant has operated free of [fol. 6240] any such restriction, and has in fact operated a substantial number of long passenger trains, particularly in more recent years. The volume and character of the passenger traffic in the two states has heretofore been found to be closely comparable; and other conditions are likewise so closely comparable (except for the train-limit law) as to render a comparison between the two states, over said period of seventeen years, a full and sufficient test of the effectiveness of the Arizona limitation upon passenger-train lengths as a regulation in the purported interest of safety of passengers or employes or others upon or affected by the operation of passenger trains.

During the six-year period 1923-1928, defendant carried approximately 2,600,000 revenue passengers in Nevada, and 2,844,000 in Arizona. It accumulated in said six years 630,000,000 revenue-passenger miles, and 9,361,000 passenger-train miles in Nevada; and 765,000,000 revenue-passenger miles, and 10,572,000 passenger-train miles in Arizona. In Nevada, in said period, six passengers were injured, two employes were killed and 14 injured, and three other non-trespassers were injured: a total of 25 casualties to persons, other than trespassers, sustained while on or getting on or off passenger trains. In Arizona, during said period, one passenger was killed, 36 were injured; one employe was killed, and 47 were injured; and five other non-trespassers were injured: a total of 90 casualties to persons, other than trespassers, while on or getting on or off passenger trains in Arizona. The casualty rate for passenger casualties was in Arizona more than five times as great as in Nevada; for employe casualties, on a passenger-train mile basis, 2.65 times as great as in Nevada; for all casualties as described above, except to trespassers, on a passenger-train mile basis, 3.19 times as great in Arizona as in Nevada.

[fol. 6241] During the six-year period 1929-1934 defendant carried approximately 1,592,000 revenue passengers in Nevada, and 2,000,000 in Arizona. It accumulated in said six years 434,000,000 revenue-passenger miles, and 7,649,000 passenger-train miles in Nevada; 602,000,000 revenue-passenger miles and 9,592,000 passenger-train miles in Arizona. In said six-year period, in Nevada, no passengers were killed, but nine were injured; one employe

was killed, and three were injured; and three other non-trespassers were injured: a total of 16 reportable casualties to persons on or while getting on or off passenger trains. The corresponding totals for Arizona were: one passenger killed and 29 injured; 3 employes killed and 24 injured; 5 other non-trespassers injured: a total of 62 such casualties. The casualty rates for passenger casualties were in Arizona, during said period, approximately 2.6 times as great as in Nevada; for employe casualties, on the train-mile basis, 5.4 times as great as in Nevada; and for all casualties as described, on the train-mile basis, three times as great in Arizona as in Nevada.

In the period 1935-1939 there occurred (on August 12, 1939) in Nevada the Harney derailment (involving a 14-car train), previously referred to. Said derailment, which was caused solely by malicious tampering with the track, occasioned the deaths of nine passengers and thirteen employes and one other non-trespasser, and the injury of eighteen passengers and twelve employes. The record indicates that the defendant had no responsibility for this accident, and no means of avoiding or anticipating it; moreover, neither the accident nor the casualties therein appear to have borne any relation to the length of the train. The inclusion of the Harney casualties in the statistics for the period 1935-1939 tends to distort the comparison, and to that extent to present the showing for Nevada less favorably than would be normal. Nevertheless, and even including said Harney casualties, it appears that in the five-year period 1935-1939, during which defendant carried approximately 1,480,000 revenue passengers, and accumulated 492,000,000 passenger miles, and 6,148,000 passenger-train miles in Nevada, there were in Nevada a total of 9 passengers killed and 24 injured; 13 employes killed and 17 injured; one non-trespasser killed and four injured, or a total of 68 reportable casualties of the classes above described; whereas, in Arizona, in which state defendant during said period carried approximately 1,980,000 passengers and accumulated 621,000,000 revenue passenger miles and 8,000,000 passenger-train miles, one passenger was killed and 45 injured; 39 employes were injured; and two other non-trespassers were injured, or a total of 87 reportable casualties of the classes above described. Despite the distorting influence of the inclusion of the Harney

casualties, the passenger casualty rates in Arizona were slightly greater than in Nevada during the five-year period 1935-1939; the employe casualty rates were practically identical, and the casualty rate for all persons on a passenger-train mile basis was but 2 per cent greater in Nevada than in Arizona.

Considering the entire seventeen-year period, there were 239 casualties to persons (other than trespassers) while on or getting on or off passenger trains in Arizona, and 109 in Nevada. The passenger casualty rate for the seventeen-year period was approximately twice as great in Arizona as in Nevada. The employe casualty rate, on the passenger-train mile basis, was 1.88 times as great in Arizona as in Nevada. The casualty rate to all persons, on the passenger-train mile basis, was 1.8 times as great in Arizona as in Nevada.

It is hereby found, that the Arizona 14-car limitation upon passenger trains bears no reasonable relation nor any [fol. 6243] relation whatever to the safety of travelers or of employes, or of others lawfully upon defendant's passenger trains in Arizona.

Sullivan, R. 3768-3769, 3775-3776.

Exhibits 291, 292.

(p) Grade-crossing Accidents:

It is common knowledge that, with the increase in the number of motor vehicles owned and operated for both private and business purposes, and the improvement of highway permitting greater speed, efficiency and comfort in the operation of motor vehicles and greater practicability of long-distance travel, collisions between vehicles of various types and railroad trains, engines or cars at railroad grade crossings occur with alarming frequency.

On the lines of the defendant in Arizona there were, as of December 31, 1939, 654 crossings at grade on public highways over defendant's track. Eighty-four of these crossings are in or closely adjacent to the various towns and cities upon said lines. None of said 654 crossings at grade is protected by mechanical crossing gates; but 36 are protected by audible and visible signals other than fixed signals, and one by a watchman on duty a part of the 24 hours each day. By comparison, there were in Nevada, as of December 31, 1939, 211 public crossings at grade over defend-

ant's lines. Four of these were protected by watchmen, and 20 by audible and visible signals; the remainder by fixed signs only.

In addition to said public crossings there are, on defendant's lines in Arizona and Nevada, numerous private crossings at grade, the use of which is governed by agreements between the users and the railroad or restricted by gates located in the fence lines.

[fol. 6244] Casualties to all classes of persons, in highway grade-crossing accidents in which automobiles were involved, on all steam railroads of the United States, declined in absolute number and in proportion to the number of automobiles registered, during the period 1923-1939; but the rate of such casualties, as measured against the train miles accumulated, remained almost constant. Thus in the years 1923-1928, there was an average of 7,843 such casualties per year; the rate per 10,000 automobiles registered was 3.85; and per million train miles, 6.41. In the years 1929-1934, the yearly average was 6,093; the rate per 10,000 automobiles registered was 2.41, and per million train miles, 6.40. In the five years, 1935-1939, the yearly average was 5,718; the rate per 10,000 automobiles registered was 1.98, and per million train miles, 6.58. Over the seventeen-year period, the average rate per million train miles was 6.45, and in no year was there any very substantial variation from this average. About 34.6 per cent of the accidents occurring during the five years, 1935-1939 were caused by automobiles striking the sides of trains.

Of the 112,207 casualties occurring on all railroads of the United States during said seventeen years, 27,792, or 24.8 per cent were fatal.

Assuming the traffic over a grade crossing, be it either vehicles or persons, to be the same, the hazard of grade-crossing accidents involving trains increases proportionately with the increased number of trains using the crossing.

The statistics of grade-crossing accidents for the states of Arizona, Nevada, and New Mexico, set forth in exhibits introduced by plaintiff, indicate that the frequency rate of such accidents as related to the number of motor vehicles registered, is slightly lower in Arizona than in either of the [fol. 6245] other states, but fail to show the frequency of such accidents, as related to train movements, in any of said states. In the absence of such a showing, plaintiff's said ex-

hibits do not afford a satisfactory basis for any findings upon the question whether the Train-Limit Law reduces or increases the hazard of grade-crossing collisions.

It is found that there exists a hazard of collisions at grade crossings between trains, engines or cars, on the one hand, and vehicles on the other, that, assuming the same use of the crossings by vehicles to continue, will increase somewhat in proportion to the additional number of freight trains, engines or cars operated over the grade crossing, whether in road or in switching movements. Such collisions are a source of casualties not only to the drivers and occupants of vehicles, but also to the train and engine crews and other persons on the train or engine involved in the accident.

The Train-Limit Law, by requiring a greater number of trains to be run than would otherwise be necessary, increases the hazards of casualties to the public, and also to defendant's employees, incident to grade-crossing accidents in Arizona and the adjacent affected territory.

Herbert, R. 2830-2839, 2857-2859, 3816-3820; *Sullivan, R.* 3616-3626, 4002.

Exhibits 200, 201, 268, 293, 334, 335, 336.

(q) Freight Train Derailments—Nevada, Arizona, and New Mexico

There has been a reduction in the frequency rates of derailments caused by defects in or failures of freight-car equipment in road freight trains, including mixed trains, taking place on defendant's lines in both Arizona and [fol. 6246] Nevada; such derailments are substantially less frequent, whether considered from the train-mile or the car-mile basis, in Nevada than in Arizona. Classifying reportable derailments caused by such defects, according to the classifications of accidents prescribed by the Interstate Commerce Commission, they fall into seven general classes: (1) trucks, (2) wheels and axles, (3) air brakes and appurtenances, (4) hand brakes and brake rigging, (5) couplers, (6) draft rigging, and (7) car bodies and other parts of equipment.

During the six years 1923-1928, reportable derailments from such causes were, in Nevada, 37 in number, and at the rates of 2.80 per million train miles and 4.79 per 100 million car miles; in Arizona they were 58 in number, and

at the rates of 4.09 per million train miles and 7.85 per 100 million car miles.

During the six years 1935-1940, such derailments were, in Nevada, 18 in number, and at the rates of 1.63 per million train miles, and 2.09 per 100 million car miles; in Arizona, 27 in number, and at the rates of 1.81 per million train miles, and 3.26 per 100 million car miles.

For the 18-year period 1923-1940, there were, in Nevada, 70 such accidents, the rate being 2.02 per million train miles, and 2.93 per 100 million car miles; in Arizona, 106 such accidents, the rates being 2.51 per million train miles, and 4.64 per 100 million car miles. Of the 70 Nevada derailments, 35 occurred on short trains. All the Arizona derailments were also on short trains. There were no Nevada derailments due to defects in or failures of freight car equipment in the years 1932 and 1935; and only one in the year 1939. In Arizona, there was no year without such a derailment, though only one occurred in 1932.

[fol. 6247] The reportable damage from such derailments was: in Nevada, 1923-1928, \$40,096; 1935-1940, \$51,036; 1923-1940, \$102,011; in Arizona, 1923-1928, \$120,839; 1935-1940, \$42,616; 1923-1940, \$202,401. There were three trainmen casualties in the 70 Nevada derailments, none fatal; there were two employe casualties, both being fatal in the 106 Arizona derailments. Of the total of 176 derailments in the two states, 141 occurred on short trains, and 35 on long trains.

Comparing the totals and frequency rates of such derailments in New Mexico, with the corresponding showing for Arizona and Nevada, the following appears: In the 11-year period 1930-1940, there were in New Mexico 29 such derailments, at the rates of 1.59 per million train miles, and 2.89 per hundred million car miles; in Arizona, 42, at ratio of 1.68 per million train miles; and 3.03 per hundred million car miles; in Nevada, 31, at rates of 1.62 per million train miles, and 2.11 per hundred million car miles. Of the 102 such derailments in the 3 states, only 24 (6 in New Mexico, and 18 in Nevada) were on long trains; and 78, or 76.5% of the total, were on short trains.

Giving full consideration to the substantial improvements in roadbed and equipment as heretofore stated, it is hereby found that the arbitrary limitation of freight trains on defendant's lines in Arizona to 70 cars, exclusive of

caboose, has resulted and continues to result in an increased hazard of train accidents over that resulting from the standard long-train method of operation, and a consequent increase in the hazard of casualties to those who are subject to the hazard of train accidents.

Sullivan, R. 3748.

Exhibits, 286, 287, 288, 289, 290, 388, 389.

[fol. 6248] (r) Emergency Applications of Air by Engineer

It was asserted on behalf of plaintiff that a definite casualty hazard exists on long freight trains because of emergency applications of the air brakes by engineers in the locomotives.

It appears that since October 4, 1936, there has been no reportable casualty to any one of defendant's employees in Nevada attributable in whole or in part to said cause. From January 6, 1923, to October 4, 1936, there were twelve such casualties; five on long trains, and seven on short trains. In Arizona, during the eighteen-year period 1923-1940 there were nine such casualties, all on short trains, the latest occurring Jan. 18, 1933.

The evidence shows that the application of the air brake in emergency by an engineer on a freight train is a comparatively rare occurrence. The necessity for the use of the air brake in emergency by the engineer is directly related to the number of trains operated, and not to the length of the train.

Piffeld, R. 5218; Menzies, R. 5244-5245.

Exhibits 274, 275.

(s) Heavier Graduating Springs

Out of 53 casualties attributed to slack action, other than incident to break-in-twos, air hose and brake pipe failures, and engineers' emergency applications, on both long and short trains on defendant's lines in Nevada, during 18-year period 1923-1940, 16 such casualties resulted from undesired emergency applications of the air brakes, presumably due, judging by the circumstances and there being no evidence to the contrary, to a light graduating spring in the triple valve, which is part of the air brake mechanism underneath the car. The five of these casualties which occurred on short trains occurred prior to 1926. Eight of the

11 casualties which occurred on long trains occurred prior [fol. 6249] to 1929, the 9th in 1933, the 10th in 1935, and the 11th in 1937.

In Arizona there were 67 such casualties on defendant's lines during said 18-year period, from causes other than break-in-twos, air hose, and brake pipe failures, and engineers' emergency applications, all but two of which occurred on short trains. Twenty-five of said 67 casualties resulted from undesired emergency applications of the air brakes, likewise presumably due, as in Nevada, to a light graduating spring in the triple valve of the car where the emergency application initiated. Twenty-one of said 25 casualties occurred prior to May 16, 1930; the remaining four, including two occurring on a long train at Yuma, took place in 1937.

The evidence shows without contradiction that by 1929 the use of a heavier graduating spring, which largely prevents such undesired emergency action, as above described, has become practically universal, and after January 1, 1935, compulsory on cars offered in interchange as well as standard on all defendant's cars and on all cars of the Pacific Fruit Express Company.

The 16 casualties in Nevada above referred to formed 13.5 per cent of the total of 118 casualties attributed to slack action occurring on both long and short trains in said state during the 18-year period 1923-1940. The 25 Arizona casualties above referred to formed 24.3 per cent of the 103 slack-action casualties in said state during said period. It is found that slack-action accidents on either long or short trains, due to this particular cause, are no longer to be considered a factor of material consequence in train operation.

Leriche, R. 78-79; *Cartmill*, R. 1817-1818; *Durnil*, R. 4462-4463; *Cooper*, R. 4533; *Shaw*, R. 4935; *Fifield*, R. 5211.

Exhibits 2, 135, 203, 204, 274, 275, 280.

[fol. 6250] (t) Arizona Long-Train Operations, 1940

During the period March 2-April 30, 1940, as heretofore found, defendant on 62 occasions operated long passenger trains in Arizona, accumulating 15,587 long passenger-train miles, and 243,749 passenger-car miles in such long trains. There were seven accidents, resulting in seven casualties.

on or in connection with the operation of passenger trains during said period. All of the trains involved in said accidents were trains operated in conformity with the train-limit law, and all but one were trains of 14 cars or less. The one such train which exceeded 14 cars consisted of 26 cars, two short trains having been consolidated between terminals, because of an engine failure. There were no accidents or casualties on any of the 62 long trains operated as aforesaid during said period.

During the month of April, 1940, as heretofore found, defendant operated some 302 long freight trains in Arizona. Said long trains accumulated 37,257 train miles, and 3,180,278 car miles; the average length was 85.36 cars. During said month the short trains operated by defendant in Arizona accumulated 199,761 train miles and 10,533,262 car miles, and had an average length of 52.73 cars.

There were seven accidents on or in connection with the operation of defendant's freight trains in Arizona in April, 1940; four resulted in casualties. All but one of these accidents involved short trains. That one accident occurred when a brakeman fell, alighting from the caboose on a 91-car train, said caboose being at the time detached from the train and handled alone by the engine.

It is hereby found that defendant's long freight and passenger train operations in Arizona in 1940 were conducted [fol. 6251] without causing or incurring any accident or casualty which could or would have been prevented or minimized in any degree if the train-limit law had been observed; that all the accidents occurring during said period either occurred on trains operated in full conformity with the law, or (in one case) in circumstances where the length of the train had no bearing whatsoever.

The experience of defendant's said Arizona long-train operations confirms the conclusion, drawn from the other evidence of record herein, that long-train operations can and could and would be conducted and carried on, upon defendant's lines in Arizona, with substantially greater safety than if the limitations of the law were fully observed.

Sullivan, R. 3785-3788, 3793-3796.

Exhibits 246, 294, 295.

(u) Employees Affected by the Train-Limit Law

The defendant's employees in Arizona who are affected, in various aspects of their employment, by the Train-Limit

Law, are largely employes of the Tucson Division. Certain employes of the Rio Grande Division, employed on that portion of the Tucson-Douglas-El Paso line which is within Arizona, are also affected to some extent.

Insofar as concerns the opportunity for employment, said law directly affects only those train and engine service employes who are engaged in main-line freight and passenger train service; in that said law, by compelling a relatively larger number of trains to be run than otherwise would be required, causes a corresponding increase in the number of such employees actually engaged in manning such trains.

There were, as of 1939, some 2,693 employes on the Tucson Division. 644 of said employes, or 23.9 per cent of the [fol. 6252] entire number, are train and engine service employes engaged in main and branch line (as distinguished from yard) service. Said total of 644 employes represents the entire number whose employment or opportunities for employment can be said to be affected by the law.

Insofar as concerns safety of employment, all said train service employes, and as well all employes whose duties require them to be or go upon the tracks, are affected by the law; in that by increasing the relative number of trains run, said law increases the hazards of train and train-service accidents to which such employes are subject, and particularly (among others) the following hazards: (1) of being struck and run down while on or near the tracks in the course of duty, (2) of being involved and injured in head and rear-end collisions; (3) of being involved in locomotive accidents; (4) of being injured in grade-crossing accidents; (5) of slipping or falling while getting on or off trains. The classes of employes whose safety is thus impaired by the law include, in particular: all section men, signal men, roadmasters, gang, bridge and section foremen, and bridge builders (numbering some 818 employes, or about 30 per cent of the total number); and all train and engine service employes (numbering, including those in yard as well as in road service, some 834, or about 31 per cent of the total).

The plaintiff's contention that the law promotes safety of employment relates only to potential slack-action injuries to train service employes (not including enginemen) upon main line freight trains. It does not appear to be contended that the law promotes the safety of any employes on passenger trains, or on the engines of freight trains, or any employes on branch line trains. There were, as of 1939, only

[fol. 6253] 299 conductors and brakemen in through freight service, and only 32 such employes in local freight service; or a total of 331 employes whose safety, according to plaintiff, is in any manner enhanced by the law. As contrasted with this number, there are 1652 employes, or approximately five times as many, whose safety of employment is definitely shown to be impaired by the law.

Sines, R. 2544-2549.

Exhibits 194, 313.

(v) Increase in Accident and Casualty Hazard Inherent in Increase of Train Units

The evidence clearly shows that the frequency of train and train service accidents is directly related to the number of train units operated, and that when more train units are run than are necessary to handle a given amount of traffic, the hazard of accident in the handling of such traffic is correspondingly increased.

As found in Finding X(c) hereof, a limitation of freight trains on defendant's lines in Arizona to not more than 70 cars exclusive of caboose, and of passenger trains to not more than 14 cars, results in defendant being compelled to operate substantially more freight and passenger trains to carry a given volume of traffic than it would operate under the standard long-train method of operation. In 1938 the number of freight trains operated on the Yuma-Gila-Lordsburg line alone, under compulsion of the law was, as found in Finding X hereof, 4304 greater, or an increase of 30.8 per cent more, than the number actually necessary if it was not for the law. Such increased number of trains substantially increased the number of starts and stops of freight trains, and the number of meetings and passings of freight and passenger trains. In 1938, as found in Finding X(b) hereof, the additional number of train meets and [fol. 6254] passings required totalled about 16,500. Such additional number of trains also necessitated additional light engine movements in substantial number, and a substantially increased number of switching movements in yards.

Such additional number of trains also required a substantially greater number of telegraphic and telephonic train orders and messages directly relating to the movement of trains, and thereby increased the hazard of train and

train-service accidents resulting from misunderstanding or forgetfulness of train orders. Such an additional number of trains increased the number of employees required to move the same amount of freight and passenger traffic, and thereby increased the hazard of casualties due to failure to observe rules or signals, slipping, falling or being run over while getting on or off trains, and other classes of casualties related to the number of train units operated. Additional trains to those necessary to handle the traffic under standard long-train operation also increase accidents and casualties in yards, accidents to employees such as section men and signal maintainers, grade-crossing accidents, and head-end and rear-end collisions. The additional locomotives that are operated to handle the additional trains increase the hazard of every accident or casualty that is related to the number of locomotives operated.

Viewing the evidence in its most favorable aspect for the plaintiff, it clearly appears and is found that, if short-train operation may or should result in any decrease in the number or severity of the "slack" or "slack-surge" type of accidents or casualties, such decrease is substantially more than offset by the increased number of accidents and casualties from other causes that follow the arbitrary limitation [fol. 6255] of freight trains to 70 cars, exclusive of caboose, and passenger trains to 14 cars, to handle the same volume of freight and passenger traffic that can be and is practicably and efficiently handled without such limitation. Thus the Arizona Train-Limit Law not only bears no reasonable relation to safety but, to the contrary does, and if enforced will continue to, impair and lessen substantially the safety of defendant's train operations in Arizona and the adjacent affected territory.

XIII

Analysis of Certain Contentions Advanced by Plaintiff

- (a) The Contention that, with Long-Train Operation, Trains Would Be Delayed at Meeting and Passing Points because of Inadequate Siding Capacities

Plaintiff appears to contend that if long-train operation were carried on in the affected territory, trains would be delayed at meeting and passing points because of the fact that long freight trains would, in many instances, exceed

the present capacities of the sidings; so that, according to plaintiff, a meet or pass could be accomplished only by the operation known as "sawing by"; and that such operation causes delays to trains involved and to other following and approaching trains.

The testimony does not sustain or support this contention. The only type of "saw-by" referred to in the testimony is that involving a meet or pass between trains, one of which is longer and the other shorter than the siding at which the meet or pass takes place. The delay to trains incurred by this type of saw-by is negligible, and does not in any event involve more than ten minutes of delay to either train.

[fol. 6256] Moreover, while there are at present comparatively few long-train sidings between Yuma and Lordsburg, sidings exist at seven stations between Lordsburg and El Paso at which trains of more than 100 cars can be accommodated; and as heretofore found, defendant plans and intends if and when long-train operation is undertaken, to extend sidings and increase siding capacities in the affected territory to the extent necessary to permit long trains to meet and pass each other in the same manner as on other portions of defendant's lines where such long-train operations are conducted. Until longer sidings can be provided, defendant contemplates operating long trains in one direction or the other, but not in both directions at the same time.

Such limited long-train operation is entirely practicable with present siding facilities, and does not and would not involve or create any substantial delays to trains or traffic. On the contrary, by reducing the number of trains operated and in consequence the number of meets and passes, it would and does tend to that extent to eliminate delays, and to expedite the trains and the traffic carried therein.

Dyer, R. 2017, 2019, 2021-2022; *Sines*, R. 2468-2572, 3359-3398; *Herrell*, R. 2754-2755, 4068-4072; *Fail*, R. 4745-4746, 4891.

Exhibits 197, 234 to 239, inclusive.

(b) The Contention that Trains Should Be Limited to 70 Cars in Order that the Members of the Crews May See and Interpret Signals more Readily

It was claimed by plaintiff that the distance of the caboose from the engine cab in a long train makes it extremely dif-

ficult and at times impossible for an engineer, fireman or head brakeman in the engine cab to see a signal from the [fol. 6257] caboose. Those signals are given manually in the day time, and by lantern at night. In an emergency the conductor or brakeman in the caboose has the privilege, and is encouraged to, and frequently does, light a red fusee at night, which is a certain and effectual way of conveying a stop signal to the engineer.

Under defendant's operating rules there is but one signal that needs to be used by a conductor or brakeman in a caboose while the train is in motion, and that is the stop signal. Frequently brakemen are at or near the middle of long trains, or some distance from the caboose, and the signal can be relayed. But when any stop signal has not been complied with by the engineer, and it is evident to the conductor that the signal has not been seen, the conductor has, under the rules, the right, and it is his duty, in case of any emergency, to use the conductor's valve in the caboose, which has the effect of applying the air brake in emergency first on the caboose, then on the car next ahead, and so on serially, car by car, toward the head of the train. There can be no severe slack-action shock in the caboose in such a case.

The evidence shows that no reportable casualty has resulted during the 18 years, 1923-1940, on defendant's lines in Nevada or Arizona, or during the 11 years, 1930-1940, in New Mexico or on the Los Angeles Division, California, from the use of the conductor's valve in the caboose, and no witness stated that any such casualty had occurred elsewhere. The application of the conductor's valve may and occasionally does result in break-in-twos of freight trains, but no reportable casualty resulting from such a break-in-two was testified to.

When the train is at a standstill and a "proceed" or "back-up", or other signal is to be given from the ground or the top of the train to the engineer, no accident can result [fol. 6258] if the engineer does not see the signal. The signal is repeated until he does see and acknowledge it, and in extreme cases the brakeman is sent forward to a point where the engineer can see such a signal.

No reportable train or train-service accident, occurring while a train was in motion, has occurred in Arizona or Nevada during the period 1923-1940, due to failure to observe or properly to interpret signals. Only one reportable train

accident assigned to this cause has occurred in said states during the same 18-year period. No casualties were involved in said accident, which involved only the movement of a helper engine, and two cars and a cabooses, the remainder of the train being at a standstill at the time.

It is evident, and it is hereby found, that the Arizona Train-Limit Law is not a reasonable regulation, in the interest of greater safety of operation, with respect to the giving and receiving of signals while trains are standing or in motion.

Durnil, R. 4406-4410, 4425-4439, 4459-4462; Kennedy, R. 4512-4521; Cooper, R. 4540; Cheek, R. 4606-4608; Stevenson, R. 4633-4636; Ash, R. 4783-4786, 4790-4795, 4831-4839; Fail, R. 4869-4876, 4882.

Exhibits 274, 275, 289, 290, 386, 387.

(c) The Contention that Members of the Crews on Long Trains are in Constant fear of Injury, and are thereby Rendered Less Alert and Efficient in the Performance of their Duties.

The plaintiff appears to contend that the trainmen, who in the course of their duties, may be called upon to ride in the cabooses on long trains in Arizona or New Mexico, are in constant fear of injury from "slack-action" accidents, and are consequently rendered less alert and efficient in the performance of their duties, with resulting detriment to [fol. 6259] the safe operation of all trains; that the law, by limiting trains to 70 cars, eliminates such fear, because it tends to prevent slack-action accidents.

While two conductors, employed by defendant and appearing as witnesses for plaintiff, testified that they were at times fearful of slack-action, while riding in cabooses of long trains, the record fails to show that either the witnesses so testifying, or any other employes, were thereby rendered less alert or efficient in the performance of their duties, or that their physical condition or the safety of train operation has been or would be adversely affected thereby.

There is no basis whatever for the claim that the limiting of trains to 70 cars does or will prevent slack-action accidents, and thereby eliminate such alleged fear. As heretofore stated, the record shows that, over the 12-year period, 1929-1940, slack-action accidents, and reportable casu-

alties occasioned thereby, are and have been somewhat more frequent, measured on a car-mile basis, in Arizona, where the 70-car limit prevails, than in Nevada, where long-train operation has predominated throughout said period. This type of casualty was also substantially more frequent in Nevada, during the years of predominant short-train operation, than in the subsequent years of predominant long-train operation (1926-1940). In Arizona during the twelve years (1929-1940) immediately last past, there were 62 reportable slack-action casualties, all but two of which occurred upon short trains.

The alleged fear or apprehension of long trains expressed by plaintiff's said witnesses is wholly unsubstantial and without foundation. These witnesses have by their own choice worked for many years in the long-train territory between Lordsburg and El Paso, though having ample [fol. 6260] seniority to hold equivalent positions and perform equivalent work in the short-train districts between Yuma and Lordsburg.

Kennedy, R. 4501-4504; Cooper, R. 4524-4526; Stevenson, R. 4619-4621; Ash, R. 4767-4778, 4821-4823; Fail, R. 4850-4861, 4891-4895; Shaw, R. 4915-4917.

Exhibits 274, 275, 280, 395.

(d) The Contention that Long Trains cannot be Properly Inspected or Supervised while in Operation, but that Short Trains can be and that Long-Train Operation Therefore Results in Greater Hazards.

Plaintiff appears to contend that the duty of inspecting trains at stops, and of supervising the same while in motion, for the purpose of detecting and locating defects in or failures of cars and the appliances thereon, cannot be completely or satisfactorily performed by trainmen upon long trains, but can be more adequately performed on short trains; that additional hazards of train operation thus result from the operation of long trains, which do not occur in the operation of short trains. This contention is not sustained or supported by substantial testimony; on the contrary, the evidence shows that the claim is not well founded.

The rules and practices in force in the affected territory afford ample opportunity for the inspection of cars of long freight and passenger trains at terminals, and at other

points en route where stops are made, either for the purpose of inspection alone, or also for the purpose of taking water, cooling wheels, and other incidental purposes, or in the case of passenger trains to receive and discharge passengers, mail, baggage or express; and such inspections can be made and adequate supervision exercised while such [fol. 6261] trains are in operation, both at and when leaving stations, and while running over the road between stations.

In freight-train operation each brakeman in the crew has a particular station on the train where he normally rides, unless some occasion or duty causes him to ride elsewhere. Thus, the head brakeman usually rides upon the locomotive or some car closely adjacent; the swing brakeman frequently rides in the caboose, but may be anywhere upon the train; the rear brakeman (flagman) and, usually, the conductor ride in the caboose. Each brakeman is required to and does maintain careful watch over the running of those cars within the range of his vision. It is the duty of the engineer and fireman likewise to keep watch over those portions of the train which can be seen from the engine.

The duties of observation and inspection of trains in operation can be and are as efficiently performed on long trains as on ~~trains of~~ less than 70 cars. Thus in Nevada, where a conductor and the same number of brakemen are employed as in Arizona upon a freight train of 50 cars or more, and where long-train operation was undertaken on a substantial scale in about 1925, and has predominated since about 1929, the reportable derailments due to defects in or failures of freight-car equipment were 4.79 per 100 million car miles in the 6-year period 1923-1928, 1.97 during the 6-year period 1929-1934, and 2.09 during the 6-year period 1935-1940. For the 11 years 1930-1940 such derailments were at the rate of 2.11 per 100 million car miles. The total number of such derailments during the 6-year period 1935-1940 was only 18, 9 of which were on short trains; during the 11-year period 1930-1940, 31, of which 11 were on short trains.

[fol. 6262] In Arizona, by comparison, and in spite of the asserted greater opportunity to detect such defects in freight-car equipment running in short trains, and thereby to prevent such accidents, the reportable derailments due to defects in or failures of freight-car equipment were at

the rate of 7.85 per 100 million car miles in the 6-year period 1923-1928, 2.93 in the 6-year period 1929-1934, and 3.26 in the 6-year period 1935-1940. The rate during the 11-year period 1930-1940 was 3.03. There were 27 such derailments in Arizona during the 6-year period 1935-1940, and 42 during the 11-year period 1930-1940, all on short trains. Both the actual number, and the frequency rate of such derailments, were about 50 per cent greater in Arizona than in Nevada during the 6-year period ending in 1940.

In New Mexico, during the 11-year period 1930-1940, there were 29 such derailments, and the frequency rate was 2.89 per 100 million car miles. 23 of said derailments in New Mexico occurred on short trains, and only 6 on long trains.

During the first six months of the year 1940, during which period defendant operated 1,900 short freight trains and 652 long freight trains over the district between Lordsburg, New Mexico, and El Paso, Texas, and 741 short passenger trains and 18 long passenger trains over the same district, 123 delays and occurrences having to do with the operation of freight cars in such freight trains, and 3 delays and occurrences having to do with the operation of passenger cars in such passenger trains, were discovered and detected; practically all by members of train crews, either during inspections at terminals, or while standing at stations, or upon observation while the trains were in motion. These defects and occurrences were reported by the train conductors upon their time return and delay reports. 88 of [fol. 6263] said 123 defects and occurrences were on trains of 70 cars and less. The 1,900 short freight trains aforesaid accumulated 17,851,722 car miles, an average of 202,860 car miles for each reported defect of every kind.

35 of the 123 defects and delays thus reported occurred on long freight trains. Said 652 long trains accumulated 96,766 train miles and 9,100,000 car miles: an average of 260,000 car miles for each such reported defect. Only 3 of said reported defects resulted in accidents reportable to the Interstate Commerce Commission: 1, occurring on a 65-car train, resulted in damage of \$5,005; 1, on a 99-car train, resulted in damage of \$225, and 1, on a 100-car train, resulted in damage of \$200. There were no reportable personal injuries associated with any of said defects or occurrences.

The 3 such delays reported by conductors on passenger trains all occurred on short trains. The 741 short passenger trains operated during said 6 months' period, in said territory between Lordsburg and El Paso, accumulated 1,270,376 passenger-car miles, or an average of 423,459 car miles per delay. The 18 long passenger trains, upon which no delays or defects were reported; accumulated 42,448 car miles.

Although plaintiff called a number of witnesses to testify respecting freight and passenger-train operation in the affected territory, none of said witnesses testified or referred to any reportable accident or casualty occurring upon a long train, as to which it was claimed by the witness, or made to appear, that it could have been avoided or the effects minimized, if the train had been operated within the restrictions set forth in the Train-Limit Law. None of said witnesses testified or referred to any derailment or other accident, caused by or attributed to a defect in or failure of [fol. 6264] the equipment or appliances upon a freight or passenger car in a long train, as to which it was claimed or made to appear, either directly or by reasonable inference, that the accident could have been averted, or the effects thereof minimized, through detection of the defect while the train was in motion, or at a standing inspection, or at a rolling inspection leaving a stop, if the train had been within the limits prescribed by the Train-Limit Law, rather than a long train.

The record shows, and it is hereby found, that the inspection of all trains, including long trains, both by car forces at terminals where such forces are provided, and by train crews at terminals and while on the road, and the supervision of such trains while in motion, are adequate and satisfactory; that sufficient time and opportunity for such inspections are provided; and that the alleged additional hazards, claimed to be due to inadequate or incomplete inspections or supervision of long trains, do not exist in any part of the affected territory, and would not exist or be created if long-train operation were adopted in Arizona as the customary and standard practice.

Durnil, R. 4401, 4408-4424, 4440-4443, 4447-4450, 4462-4463; *Check*, R. 4619; *Stevenson*, R. 4638-4639; *Ash*, R. 4788-4790, 4805-4813, 4840-4844; *Fail*, R. 4863-4866, 4876-4879, 4880-4882, 4888-4891; *Shaw*,

R. 4918-4922, 4924-4927; *Menzies*, R. 5244-5246; also, annotations to. See, Finding VII (a) (4).
Exhibits 286, 287, 288, 388, 389, 397.

[fol. 6265] (e) The Contention That the Present Type of Air-Brake Equipment is Inadequate to Control the Speed of and to Stop Long Trains, But is More Efficient and Adequate upon Short Trains.

Plaintiff appears to contend that the type of air-brake equipment now in use, or available for use, upon locomotives and cars comprising defendant's freight trains does not and would not operate efficiently to control the speed of and to stop long trains upon the lines in the affected territory, but that said air-brake equipment is and would be more nearly efficient and adequate for such purposes, if such trains were to continue to be limited to not more than 70 cars, exclusive of caboose, as provided by the law. Plaintiff's said contention is not sustained or supported by substantial evidence, and is indeed clearly and wholly opposed to the great weight of the uncontradicted testimony.

Plaintiff produced, among its witnesses, some nine train-service employes of defendant, seven of whom gave general testimony respecting train operations in various portions of the affected territory, including the lines between Lordsburg and El Paso. Six of said nine witnesses were conductors, and three were engineers. One of said engineers works almost exclusively in passenger service, and gave no testimony respecting freight-train operation. The other two engineers work principally in freight service, one of them between Lordsburg and Tucson (i. e., in a short-train district), and the other between Lordsburg and El Paso (i. e., in a district where long trains are run in substantial numbers).

The engineer working between Lordsburg and El Paso testified that he had handled many long trains, and admitted that the controlling of such trains simply required more care by engineers. He referred to but one instance [fol. 6266] where he had experienced difficulty in controlling or stopping a long train; in that instance, the train was in fact safely brought to a stop at the station, and thereafter handled through to the terminal, without any further difficulty, or any accident or casualty whatsoever.

The engineer working between Lordsburg and Tucson, though engaged principally in handling short trains, also handled certain long trains between those points during April, 1940. He stated that he had used greater care in handling said trains, but admitted that he had handled the same without any greater difficulty, in so far as concerned his ability to control or stop them, than if they had been short trains.

The aforesaid six conductors called by plaintiff failed to refer to any instance where the engineer on any freight train upon which they were employed was unable to control the speed of or to stop the train, no matter what its length. Two of said conductor witnesses were actually in charge of the two long trains specifically mentioned in the complaint in this cause; but neither witness even suggested that any difficulty or unusual circumstance had arisen in the handling of said trains.

Plaintiff also called an engineer employed by the Atchison, Topeka & Santa Fe Railway Company, who, though testifying generally on the subjects of air brakes and brake-appliances in freight trains and the control of such trains by locomotive engineers, failed to refer to any instance when he, or any other engineer within his knowledge, had been unable to control or to stop a long freight train by means of the present type of air brakes. It appears that this engineer, though having sufficient seniority to obtain and hold a regular freight assignment in Arizona (i. e., in short-train territory) has exercised his seniority to obtain and hold a preferred position in freight service in California (fol. 6267) (i. e., in territory where long trains are regularly and frequently operated).

Defendant called as witnesses upon said topic two locomotive engineers of long experience in the handling of both long and short trains. Both of these witnesses are now employed by defendant as road foremen of engines, one on the Coast Division in California, where numerous long trains are operated; the other on the Tucson Division, where short-train operation prevails. Each of these witnesses testified that the handling of long trains by engineers, and particularly the controlling and stopping of said trains with the present types of air brakes, though requiring somewhat more care by the engineers, involved no greater difficulties than in the case of short trains. This testimony

was not challenged or controverted in any way by plaintiff or its witnesses.

As heretofore found, defendant operated some 302 long freight trains in Arizona during April, 1940. There is no evidence that any of the engineers handling said long trains were unable at any time to control or to stop them, or that any substantial difficulties were encountered in their operation. As to many of said trains, the record affirmatively shows that the handling was without any difficulty or other notable incident.

Skinner, R. 27-36; *Odeyard*, R. 37-41; *Kennedy*, R. 4516-4520; *Cooper*, R. 4524-4528, 4536-4538; *Stenson*, R. 4551, 4570-4572, 4621-4623; *Cheek*, R. 4594; *Shaw*, R. 4917-4918; *Fisfield*, R. 5180-5208, 5210-5221; *Menzies*, R. 5237-5245.

[Vol. 6268]

XIV

Extent of Penalties Imposed by the law

Section 3 of said Train-Limit Law provides for a penalty of not less than \$100.00 nor more than \$1,000.00 for each violation thereof; that is to say, for each long train operated in Arizona. If defendant had followed the long-train operating practice in Arizona during the year 1938, it would have operated, upon its main lines in that state, approximately 7800 long freight trains, and approximately 360 long passenger trains. Defendant would thus have been liable, if such long-train operation had been followed, for cumulative penalties ranging from approximately \$816,000 to approximately \$8,160,000. Said sums last mentioned fairly represent the range and amount of the cumulative annual penalties for which defendant would be liable, under the terms of the law, if it were to disregard and violate the same, and were to adopt and follow the practice of standard long-train operation in Arizona.

Exhibits 214, 246.

XV

The Permissible Number of Cars in an Interstate Train Is a Subject of National and Not Local Concern

The permissible number of cars in an interstate train is a subject of national, and not local, concern; it is a subject which, if any regulation thereof be needed, requires a gen-

eral system of uniformity of regulation; and it is a subject which, if regulated at all, should and must be regulated by Congress, and not by the several states. For it is wholly impracticable to construct and maintain railroad terminals [fol. 6269] exactly on state lines or to split up or consolidate through trains except at terminals. If other states should regulate train lengths in accordance with their respective notions as to what should be proper or desirable within their respective boundaries, all such regulations would necessarily have substantial extra-territorial effect as does the Arizona Train-Limit Law, and to comply with these conflicting provisions would seriously impede, delay, embarrass and interfere with through interstate train operation. If other states should adopt either the Arizona limitations, or different and conflicting limitations based on their several notions as to the proper length of railroad trains, the efficiencies and economies which have resulted, as hereinbefore found, from standard long freight-train operation, would be lost, and much of the enormous investment that made such operation possible would be rendered non-productive.

XVI

Financial Burden Imposed by the Law a Factor in Determining Its Unreasonableness

The additional expense, as hereinbefore found, that defendant is compelled to incur, by reason of compliance with the Train-Limit Law is a factor that may and should be, and has been, taken into consideration as a factor, but not the sole or controlling factor in finding (as is hereby found) that the law, considered as an exercise of the police power of the state in an ostensible attempt to promote public safety, the safety of travelers and the safety of railroad employes is, in so far as defendant is concerned, unreasonable, arbitrary, and without any reasonable relation to its purported objects, or to those claimed by plaintiff. Viewed entirely apart from the effect of the law on interstate commerce [fol. 6270] as hereinbefore found, and from the financial burden on such commerce imposed thereby, the law has created, now creates, and as long as it may continue in effect, will perpetuate a financial burden on defendant that is, under any fair and reasonable view of the evidence, entirely out of proportion to and far in excess of any safety

1034
to the public; to travelers upon defendant's railroad, or to employees of defendant, that is or can or will be promoted thereby.

XVII

Further Arbitrary Effect of the Law

As to defendant's operations into, across, and out of Arizona, the Train-Limit Law is further arbitrary and unreasonable in that by its terms it applies and is made to apply to any and all trains in all circumstances, except those described in the proviso in Section 3 of the Act, whether a train be of all loaded cars, or all empty cars, or partly of loaded and partly of empty cars, each car being treated as a unit regardless of its construction, type, length, weight or condition or whether loaded or empty.

XVIII

Impairment of Defendant's Facilities by the Law

The necessary effect of the Train-Limit Law, as applied and enforced against defendant, is, has been and will continue to be substantially and continuously to impair the use and usefulness of the facilities used and usable by defendant in the transportation of interstate commerce, both passengers and property, into, out of, across and through the State of Arizona.

{fol. 6271}

XIX

Financial Burden on Interstate Commerce

The additional and unnecessary expense, as heretofore found, of defendant's compliance with the Train-Limit Law, has been and is and will and would continue to be a substantial, direct and continuing burden upon defendant as an interstate common carrier by railroad, and upon the interstate commerce carried on by defendant into, out of, across, and through the State of Arizona by means of its trains.

XX

Substantial Allegations Sustained

Each and all of the substantial allegations of fact set forth in parts I, II, and III of defendant's answer herein is sustained and established by the evidence.

I

Jurisdiction

This is a civil suit in the nature of an action at law, in which the State of Arizona, as plaintiff, is seeking to recover from the defendant, a railroad corporation operating lines of railroad within said state, certain statutory penalties as provided in and by the Arizona Train-Limit Law (Sec. 69-119, Arizona Annotated Code, 1939) with respect to two alleged violations of said statute by defendant. This Court therefore has jurisdiction over the subject matter of the action, and of the parties hereto.

II

The Train-Limit Law Invades an Exclusive Federal Field and Thus Violates the Commerce Clause of the Federal Constitution

Said Train-Limit Law is unconstitutional and void as to interstate trains, which term includes substantially all of the trains operated in both directions over defendant's main lines in Arizona, because regulation of the permissible number of cars in an interstate railroad train passing from one state to another, or passing from one state through another into a third, or passing through a number of states, or passing over lines within a single state, is a subject over which exclusive legislative jurisdiction was and is vested in Congress by the Commerce Clause (Subdivision 3 of Section 8 of Article I) of the Constitution of the United States; the subject of the length and consist of interstate trains being one which requires a general or national system and uniformity of regulation, if such regulation should for any reason be required.

III

The Law Operates with Extra-Territorial Effect

Said Train-Limit Law is further unconstitutional and void, and in violation of said Commerce Clause, because its necessary, practical, and inevitable effect is, and will continue to be, to regulate the length of the interstate rail-

road trains operated over defendant's lines, not only within Arizona, but also in adjoining portions of the States of California and New Mexico, and in the State of Texas.

IV

The Law Interferes with and Unduly Regulates the Interstate Commerce Both Within and Without Arizona

Said Train-Limit Law is further unconstitutional and void and in conflict with said Commerce Clause because its necessary, practical and inevitable effect is, and will continue to be, directly, substantially, and unreasonably to interfere with and to regulate the operation of defendant's interstate trains in Arizona, and also in California, New Mexico, and Texas, and to delay and interfere with the continuous movement of said interstate trains between Arizona and other states; and also because its necessary and inevitable effect is, and will continue to be, to impair unreasonably the usefulness of the facilities employed, as well as their use by defendant, in the transportation of interstate commerce from, to and across the State of Arizona.

[fol. 6274]

V

The Law Imposes Undue and Improper Burdens Upon Interstate Commerce

Said Train-Limit Law is further unconstitutional and void, and in conflict with said Commerce Clause, because its necessary and inevitable effect is, and will continue to be to impose direct, substantial and unreasonable financial burdens upon the interstate commerce carried on by defendant, both within Arizona, and also in the adjacent States of California, New Mexico and Texas, and to impair the use and usefulness of the transportation facilities employed by defendant in the carriage of interstate commerce from, to and across the State of Arizona.

VI

The Law Conflicts With Existing Federal Legislation

To the extent to which said Train-Limit Law has, or may have, or is intended, or claimed, to have the effect of limiting the number of cars in a train to the maximum number

which can safely be controlled or stopped in one train, by the use of the types of air brakes and their appurtenances now employed on such trains, or by any other form of train-control or other safety devices, said law is further void and unenforceable against defendant, because it attempts to and does enter a legislative field already entered and therefore occupied by Congress, and thereby conflicts with and infringes upon existing legislation enacted by Congress pursuant to its powers under the Commerce Clause of the Constitution: the Congress having, under the provisions of the Safety Appliance Act, as amended (45 U. S. Code, Sections 1, 9) and the provisions of Section 25 of Part I of the Interstate Commerce Act, (49 U. S. Code 1, Section 25) delegated to the Interstate Commerce Commission full and complete authority to investigate and determine the adequacy of the air brakes, and their appurtenances, and each and all other forms of train control, automatic train-stop, and other safety devices used or proposed to be used on locomotives, cars, and trains operated in interstate commerce, and by order to prescribe the form and type thereof and from time to time to issue such amendatory and supplementary orders as said Commission may deem necessary or desirable in the exercise of the power thus delegated to it, which power and authority said Commission has duly exercised; the Congress having more particularly, in and by such statutes, necessarily empowered said Commission to determine whether the types of air brakes and their appurtenances presently used or proposed to be used upon trains in interstate commerce are or will be adequate and effective, safely and properly to control and to stop trains of the lengths now being operated or proposed to be operated by defendant in interstate commerce, both within and without the State of Arizona.

VII

The Law Operates Unreasonably and Arbitrarily to Deprive Defendant of Its Property, in Violation of Both the Commerce Clause and the Fourteenth Amendment to the Federal Constitution and Also in Violation of the Due-Process Clause of the Arizona Constitution

Said Train-Limit Law is further unconstitutional and void, and in violation of both the aforesaid Commerce

Clause of the Federal Constitution, and the Due-Process [fol. 6276] Clause of the Fourteenth Amendment to said Federal Constitution, and also in violation of the Due-Process Clause set forth in Section 4 of Article II of the Constitution of the State of Arizona, in that it operates, and will continue to operate, arbitrarily and unreasonably to deprive defendant of its property without due process of law, because:

(a) Said law fixes maximum lengths very much lower than those which generally obtain elsewhere throughout the United States, under operating conditions substantially similar to those upon defendant's main lines in Arizona;

(b) Said law makes no allowance for grade or other operating conditions, or for the construction, type, weight, or lengths of the cars composing the trains, or whether such cars are loaded or empty, or if loaded the weights of the loads therein;

(c) Said law imposes a great, substantial, and wholly unreasonable burden of expense upon, interference with, and delay to, interstate commerce, and impairs the use and usefulness of defendant's transportation facilities;

(d) Said law bears no reasonable relation to health or safety, and does not and will not either eliminate or to any substantial extent reduce any existing hazard, but on the contrary does and will create certain hazards which do not now and would not otherwise exist, and increases other hazards and dangers of railroad operation in numerous respects.

[fol. 6277]

VIII

Defendant Entitled to Judgment

Defendant is entitled to judgment in its favor, adjudging and declaring:

(a) That said Train-Limit Law is wholly void, invalid and unenforceable, as to said defendant, and each and all of its trains carrying any interstate commerce or traffic, or engaged in interstate transportation;

(b) That defendant is not liable to plaintiff by reason of any of the matters or circumstances alleged in the complaint herein, or otherwise, either for the amounts de-

manded as penalties in said complaint, or in any other sum or amount whatever;

(c) That said complaint and each count thereof be dismissed; and that said plaintiff take nothing by its action; and

(d) For its costs of suit herein incurred.

Dated and filed this the 11th day of February 1942.

Levi S. Udall, Presiding Judge in the Above Entitled Case.

[fol. 6278] Approved as to form February 11, 1942, Charles L. Strouss.

IN THE SUPERIOR COURT OF THE STATE OF ARIZONA IN AND
FOR THE COUNTY OF PIMA

No. 20087

STATE OF ARIZONA, ex rel, Joe Conway, Attorney General
of the State of Arizona, Plaintiff,

vs.

SOUTHERN PACIFIC COMPANY, a corporation, Defendant

JUDGMENT—Filed Feb. 11, 1942

This cause having come on regularly for trial on the 19th day of November, 1940, before the Honorable Levi S. Udall, Judge of the Superior Court, to whom said cause had duly been especially assigned; and Honorable Joe Conway, Attorney-General of Arizona, W. E. Polley, Esq., Assistant Attorney General, and Charles L. Strouss, Esq., having appeared for plaintiff; and Cleon T. Knapp, Esq., James P. Boyle, Esq., B. G. Thompson, Esq., Henley C. Booth, Esq., and Burton Mason, Esq., having appeared for defendant; and the case having been duly tried before said Court, sitting without a jury, a trial by jury having been duly waived pursuant to Rule 38 of the Rules of the Superior Court; and the case having been thereafter duly briefed, argued and submitted for decision; and the Court having heretofore, pursuant to Superior Court Rule 52, found the facts herein specially and stated separately its

conclusions of law,, and having caused said Special Findings of Fact and Conclusions of Law to be entered of record herein, wherein and whereby, among other things, it was and is hereby found and held:

[fol. 6279] 1. That this Court has jurisdiction over the subject matter of this suit and of the parties hereto;

2. That that certain statute of the State of Arizona, known as the Arizona Train-Limit Law, being Section 69-119 of the Official Arizona Annotated Code, 1939, which statute is set forth in full in the complaint of the plaintiff herein, is unconstitutional and void, because:

First: Said statute invades the exclusive legislative field of Congress, as limited and defined by the Commerce Clause (par. 3, of Sec. 8, Art. 1) of the Constitution of the United States;

Second: Said statute imposes direct, unreasonable and unlawful burdens upon, and interferes with, delays and obstructs interstate commerce, in violation of said Commerce Clause;

Third: Said statute impairs the use and usefulness of the transportation facilities employed by defendant as a common carrier engaged in interstate commerce;

Fourth: Said statute is in conflict with and infringes upon, and amounts to an unlawful attempt to supplement, the power-brake provisions of the Federal Safety Appliance Acts, and the safety-device provisions of Section 25 of the Interstate Commerce Act, which Federal statutes operate upon the same subject matter and are directed to the same objects as said Train-Limit Law and by which said statutes Congress has completely and exclusively occupied the field of regulation of train lengths;

[fol. 6280] Fifth: Said statute operates unreasonably and arbitrarily to deprive defendant of its property, without due process of law, in violation of both the Due-Process Clause of the Fourteenth Amendment to the Constitution of the United States, and

the Due-Process Clause set forth in Section 4 of Article 2 of the Constitution of the State of Arizona;

3. That defendant is entitled to judgment in its favor, adjudging and declaring that said Train-Limit Law is wholly void, invalid and unenforceable; that said defendant is not liable to plaintiff for the amounts demanded as penalties in said complaint, or otherwise; and that said plaintiff take nothing by its action:

Now, therefore, it is hereby ordered, adjudged and decreed:

(a) That said Train-Limit Law is wholly void, invalid and unenforceable, as to said defendant, and each and all of its trains carrying any interstate commerce or traffic, or engaged in interstate transportation, upon each and all of the grounds hereinbefore set forth;

(b) That defendant is not liable to plaintiff by reason of any of the matters or circumstances alleged in the complaint herein, or otherwise, either for the sums demanded as penalties in said complaint, or for any other sum or amount whatever;

(c) That plaintiff take nothing by its action;

(d) That defendant do have and recover from plaintiff its costs of suit herein, in the sum of \$

Dated: This 11th day of February, 1942.

Levi S. Udall, Judge of the Superior Court of the State of Arizona.

[fol. 6281] [File endorsement omitted]

IN THE SUPERIOR COURT OF THE STATE OF ARIZONA IN AND
FOR THE COUNTY OF PIMA

No. 20087

STATE OF ARIZONA, ex rel, Joe Conway, Attorney General
of the State of Arizona, Plaintiff,

vs.

SOUTHERN PACIFIC COMPANY, a corporation, Defendant

MEMORANDUM OPINION—Filed Feb. 11, 1942

This suit, brought by the State of Arizona at the relation of the Attorney General, is a civil action, seeking to recover from the defendant railroad company, which is an interstate carrier, penalties for violations of what is known as the Arizona Train-Limit Law. The complaint contains two causes of action; one charges the operation on March 2, 1940, of a passenger train containing sixteen cars; and the other alleges that on April 4, 1940, a freight train containing ninety-one cars was unlawfully operated. Both trains were operated west out of the Tucson yards. The defendant frankly admitted the operations complained of, but sought to avoid the penalties by asserting that the law in question was and is invalid and unconstitutional as applied to its interstate trains and traffic, because in conflict with various provisions of the State and Federal constitutions, which sections are hereinafter more particularly referred to.

The trial of these issues commenced November 19, 1940, and closed May 1, 1941, there being a number of intervening recesses; in all forty-six court days out of thirteen different weeks were consumed in the trial. Seventy-three different witnesses testified, many of whom came from all [fol. 6282] parts of the United States, and some 402 exhibits were offered in evidence.

The law under attack was enacted by the Legislature of the State of Arizona and approved by the Governor on May 16, 1912. A referendum was invoked and at a general State election, held November 5, 1912, the law was approved by a majority of the voters. It now appears as Section 69-119, Arizona Code Annotated, 1939. Since its adoption in 1912

this law, with but few exceptions and over short periods, has been enforced by the State and its terms complied with by the defendant. A notable exception is that by sufferance of the State the operations from the California-Arizona line into the Yuma yards has never been treated as within the purview of the law.

Briefly, the law provides that it shall be unlawful for a freight train consisting of more than seventy cars, exclusive of caboose, or a passenger train containing more than fourteen cars to be operated in the State of Arizona, and it provides a penalty of not less than \$100.00, nor more than \$1,000.00 for each violation thereof. The law when passed was entitled, "An Act Limiting the Number of Cars in a Train", without any preamble reciting its basic purpose. This Court will assume, for the purpose of determining this matter, that the law was enacted under the inherent police power of the State to promote and provide greater safety of persons and property, for it is fundamental that the State can only interfere in matters affecting interstate commerce where the health, safety or welfare of its citizens may so require, and then only when the law is reasonably adapted to accomplish the end sought to be attained.

The sole question, then, before the Court is as to the constitutionality of the Arizona Train-Limit Law as applied to defendant's interstate operations under the conditions as they have been shown to exist during the period covered by the record in this case. For, even though the law may have been constitutional when enacted in 1912, it does not prevent the Court from a re-examination to determine whether conditions may have changed so as to render it arbitrary and unreasonable, considered in the light of the changes. This record discloses that the present conditions, upon which the plaintiff must rely, are vastly and fundamentally different from those existing when the law was passed. Both the rolling equipment and the fixed plant have been practically completely changed, this through the medium of extensive improvement and reconstruction. Operating methods have been substantially modified. The volume and character of the traffic are quite different from that which was carried in 1912. As a matter of fact, the law had no appreciable adverse effect on defendant's operations when enacted, for the reason that freight trains then averaged but forty-seven cars and only 0.38%

of the trains had more than seventy cars. Passenger trains only averaged nine or ten cars. By September of 1913 the entire Southern Pacific system in Arizona had only some two miles of its track protected by block signals.

In determining the constitutional questions raised in this case I have constantly kept in mind the admonition of the present Chief Justice of the United States, wherein he said: "The power of courts to declare a statute unconstitutional is subject to a guiding principle of decision which ought never to be absent from judicial consciousness. This is that the Courts are concerned only *with the power to enact statutes, not with their wisdom*. For the removal of unwise laws from the statute books, appeal lies not only to the courts but to the ballot and to the processes of democratic government."

There can be no question but what the presumption is in favor of every legislative act, and the whole burden of proof lies on him who denies the constitutionality. The defendant here has been required to assume that full burden. The constitutional invalidity must be manifest and if it rests upon disputed questions of fact, the invalidating facts must be proved.

[fol. 6284] Here there is being called in question the validity of a statute which has been upon our books for more than twenty-eight years. It was not only passed by the Legislature, but subsequently approved by the people themselves in a referendum. More recently the Fifteenth Legislature made a special appropriation of a substantial amount to defend and sustain this law. This Court fully appreciates the delicacy of the situation and the great responsibility of rendering a judgment thereon. It is sometimes said that the court assumes a power to overrule or control the action of the people, or their representatives. This is a misconception. Our constitutions are the supreme laws of the land ordained and established by the people. All legislation must conform to the principles they lay down. When an act of a State Legislature is appropriately challenged in the courts as not conforming to the constitutional mandate the judicial branch of the Government has only one duty—to lay the article or articles of the constitution which are invoked beside the statute which is challenged and to decide whether the latter squares with the former. All the court does, or can do, is to announce its considered judgment upon the question. The only

power it has, if such may be called, is the power of judgment. This court neither approves nor condemns any legislative policy. Its delicate and difficult office is to ascertain and declare whether the legislation is in accordance with, or in contravention of, the provisions of the Constitution; and, having done that, its duty ends.

For some five and a half months I listened to the evidence adduced from the witness stand. In the intervening months, to refresh my memory, I have read the eighteen volumes comprising the Reporter's Transcript, which contains more than a million words; the numerous exhibits have been re-examined, the comprehensive briefs submitted by counsel for both parties, the last of which [fol. 6285] reached me on December 20, 1941, have been carefully studied and the hundreds of cases therein cited examined and it is now my matured conclusion that the Arizona Train-Limit Law is unconstitutional and void and I would be unworthy of the position that I hold if I did not have the courage to so declare it, irrespective of the effect of the ruling upon the parties, or those heretofore benefited thereby.

It should be remembered that this case is unique in at least two respects: It is the first train limit case to reach the State courts; second, it is the first time in the United States that the evidence in such a case has been taken before a trial judge. There are only four cases that are squarely in point, they are: The first Arizona case, the Nevada case, the Oklahoma case, and the Louisiana case. In the latter case no opinion was filed and, hence, it does not appear as a reported case. All of the four cases were brought in the Federal Court and determined by a special three-judge court. The evidence was either taken by a special master or the matter submitted on affidavits as in the Oklahoma and Louisiana cases. Admittedly none of the decisions in the four cases above referred to are controlling upon this Court. The Oklahoma law was sustained by a divided Court, while the courts in the other three cases declared the law under attack as unconstitutional. The first Arizona case was appealed to the Supreme Court of the United States and reversed on a jurisdictional ground without passing upon the merits. However, the opinions are of value in their logic and reasoning in passing upon identical questions as those here presented.

As a brief review of this type of legislation, the testimony of Dr. Parmelee, who is the Director of the Bureau of Railway Economics of the Association of American Railroads, shows that though forty-four different bills attempt- [fol. 6286] ing to regulate the length of trains have been introduced in thirty-five different states, it was only in Arizona (1912), Nevada (1935), Louisiana (1936) and Oklahoma (1937) that such laws were actually passed. Three such measures were defeated in Congress. Only Arizona and more recently Oklahoma have actually operated under such laws. The Nevada and Oklahoma statutes affected only the length of freight trains, no mention being made of passenger-train operations.

As a part of its comparative showing as to costs and methods of operation, casualties, etc., the defendant presented the National picture of railroading by witnesses, who are outstanding in their respective fields, from sixteen of the Class I roads of the United States. The railroads from which these witnesses came, perform fifty-nine per cent of the freight service, sixty per cent of the passenger service, and operate fifty-four per cent of the Class I railroad mileage of America. This evidence clearly establishes that "long-train" operating practice is the customary and ordinary practice throughout the United States and that improvements in efficiency, economy and safety are an accomplishment and necessary result of the adoption of that practice. This type of operation is unquestionably more economical and efficient than "short-train" operations. Freight train expenses vary inversely with train length. Furthermore, long-train operations permit improved schedules and performance by elimination of short-train interference. Operating conditions, including grades and curves on defendant's lines, in Arizona were not shown to be essentially different from those in other parts of the United States. As a matter of fact, eighty-four per cent of defendant's main lines in Arizona are tangent (straight) track, and of the sixteen per cent that is curved only one per cent has curves of more than six degrees. Between March 2d and April 30th, 1940, the defendant's operations were carried on without regard to the restrictions of the [fol. 6287] train-limit law, during which period some sixty-two long passenger trains and some 302 long freight trains were operated without particular incident. This further

indicates that long-train operations can be successfully carried out over the Arizona lines.

I shall not attempt in this opinion, as no good purpose could be served thereby, to make an analysis of the evidence, as that will be covered by the findings of fact filed this day. Nor shall I attempt to review and differentiate the numerous cited cases which lay down the principles of law governing these matters. I shall content myself with stating some of the principal reasons leading to the conclusion announced.

There is a field of regulation of interstate activities which, under the commerce clause, is exclusively reserved to the National Government, and I am firmly convinced that the subject of the length of trains engaged in interstate traffic falls within that class. This for the reason that the subject matter is national in its character, requiring uniformity of regulation by a single authority. If each state was at liberty to regulate the conduct of carriers while within its jurisdiction, the confusion likely to follow could not but be productive of great inconvenience and unnecessary hardship. The very purpose of the commerce clause was to insure uniformity of regulation of interstate commerce against conflicting and discriminating state legislation, such as the law in question. The absence of any act of Congress on the subject of train lengths is equal to its declaration that commerce in that matter shall be free. In other words, the inertia of government should be on the side of freedom of commerce, rather than on the side of restraint of commerce. The determination of this entire case might well be decided upon this exclusive federal field doctrine, which is in effect saying that Arizona never had the right to pass this legislation in the first instance.

[fol. 6288] There is a second so-called "joint" field of regulation, relating to those matters which require diversity of treatment according to local conditions, where the states may act within their respective jurisdictions, unless and until Congress sees fit to exercise its paramount authority. But even if the law in question were found not to fall in the "exclusive Federal field", but rather in the "joint field" of regulation, still the law must be stricken down for the reason that in my opinion Congress has, by the enactment of the Safety Appliance Act, Boiler Inspection Act, etc., coupled with the broad powers delegated to

the Interstate Commerce Commission, fully "occupied" this joint field of regulation. This would automatically oust the State of any power to supplement or expand such regulations any more than it could annul or amend them. Clearly if the law is necessary as a safety measure because "long trains" cannot be properly controlled and stopped with the present types of air brakes, then it gets over into a field already occupied by the Congress through the passage of the safety acts above referred to. Engineer Thrace Cooper of the Santa Fe System called by the State testified: "Your ability to control slack in a train rests solely on your ability to apply and release the brakes throughout the train."

There is still another infirmity to overcome: Any laws enacted by the State in the concurrent field must not be unreasonable or arbitrary and must not *substantially or directly* regulate, obstruct, impede or burden interstate commerce; *incidental or indirect interference* being all that is permitted.

The heavy direct burden cast by the law upon interstate commerce can not be seriously questioned and the impairment of the efficient use of defendant's property is of itself an unlawful taking of that property without due process of law, which is a violation of both the State and Federal constitutions. [fol. 6289] The fact that it costs the defendant in excess of \$300,000.00 a year to comply with this law would not of itself, standing alone, warrant invalidating the law, providing it was otherwise valid and bore some reasonable relation to the purpose for which it was enacted. The cost of compliance, however, with a statute of this kind is an element for appropriate consideration in determining whether the statute is arbitrary, capricious or repugnant to due process, and this factor has been so considered in arriving at a decision in this case.

The record here also amply discloses that the law causes real interference with, and delay to, interstate commerce, practically to the extent that Arizona operations create a bottle-neck. Actually ninety-three per cent of the freight traffic and ninety-five of the passenger business of the defendant in Arizona is interstate commerce. Furthermore, the law certainly imposes a great, substantial and wholly unreasonable burden of expense upon this interstate traffic. To hold in this case that interstate commerce was only

incidentally or indirectly involved would be less than realistic, for the interference and regulation is *substantial, continuous, direct and unavoidable*, as is pointed out in detail in the findings of fact. What is even more serious from the standpoint of those who seek to uphold the Act is its extra-territorial effect. The challenged law lays hands upon interstate commerce moving over defendant's lines long before it reaches the physical boundaries of Arizona, and continues directly to affect and regulate that commerce long after it has left Arizona. As a practical matter, it nearly controls the length of passenger trains from Los Angeles to El Paso, and of freight trains from Yuma to Lordsburg, the latter point being twenty-three miles East of the State line, and frequently on to El Paso, 171 miles beyond Arizona's boundary. Under the decided cases it is fatal for any police power statute to operate with extra-[fol. 6290] territorial effect, and under the guise of the police power no state may thus directly interfere with interstate commerce.

Even if the proponents of the law were able to clear all of the other hurdles heretofore discussed, there would then arise the hotly contested question as to whether this train-limit law actually bears any reasonable relation to safety. The Statute was unquestionably enacted under the police power, which is that undefined branch of government which bears the same relation to the State that the principle of self defense bears to the individual. Police power is founded upon public necessity and only public necessity can justify its exercise. If the law in question does not promote the safety of employees and travelers upon the defendant's railroad lines, and others who are affected by said operations, then it must fall.

There need be no speculation as to the effect of the law (as would be the case if this were a recently enacted statute whose prospective effect might be problematical) for the reason that the Interstate Commerce Commission, by its regulations, and the Congress by legislative enactment, have required this defendant and all other railroads to file detailed monthly reports of accidents and casualties occurring in connection with their operations. Furthermore, all of the more serious accidents are investigated by a representative of the Commission.

The defendant established the fact that operating conditions on its lines across the Salt Lake Division, through

the State of Nevada, where "long-train operations" are the rule, are entirely comparable in practically every respect to the operations on the Tucson division, in the State of Arizona. These latter operations being restricted by the law in question.

Detailed exhibits as to accidents and casualties of all types and classes were introduced in evidence. These exhibits covered operations particularly in Nevada and Arizona, as well as showing the National picture as a whole. From this evidence the Court is able to draw an irrefutable and striking comparison as to casualties under the "long" and "short" train operations.

Considering, first, passenger-train operations, the record shows that the casualty rates in Arizona, on the train-mile or any other recognized basis, are nearly twice what they are in Nevada. The Santa Fe operations in Arizona show the same trend. Surely the ultimate test of increased hazard is to be found in the actual record of casualties covering a twenty-eight year period.

From the standpoint of the safety of persons and property, slack and slack-action casualties on passenger trains are of no significance whatever.

Long-train method of operation prevails in passenger service all over the United States, except in Arizona, and the statistics demonstrate, from the safety angle, that the fourteen-car limit has no logical or reasonable basis. Furthermore, long passenger-train operations in Arizona are entirely practicable and would result in greater efficiency, economy and safety.

Hence, certainly as applied to passenger-train operations, the challenged law bears no reasonable relation to its claimed object of safety, and instead of promoting that object actually increases many hazards, and creates many others which would not exist if the law were not enforced.

In passing it might not be amiss to call attention to the splendid stride that has been made throughout the United States in recent years in reducing casualties. Arizona to a limited extent has shared in these reductions. This record shows that on the Class I roads the casualty rate for the years 1935-1939, was 10.63 per hundred million passenger miles, which is another way of saying that there was a casualty to a passenger for every 9,407,000 miles of traffic.

Considering next freight-train operations: The same [fol. 6292] careful records are kept of these operations as

is required by the I. C. C. of passenger-train operations, which includes reporting all train accidents where the damage exceeds \$150.00, of all train service accidents and non-train accidents resulting in casualties to persons. If an employe is injured to the extent that he is incapacitated for work for a three-day period, within ten days after the accident it is classified as a casualty and becomes reportable. If a passenger is incapacitated for one day it is reportable as a casualty. (The term casualty includes fatalities. As a matter of fact ninety per cent of accidents resulting in fatalities to passengers or trainmen are investigated by a representative of the I. C. C., and it is rather significant that they have failed to find or report in any one year that the length of trains had anything to do with the number of casualties.

Furthermore, this record contains exhibits comparing the defendant's freight-train operations in Arizona with its operations in Nevada and New Mexico, as well as the Class I roads of America. The element of speculation, as to the result of long and short-train operations, is therefore largely eliminated. From all of which it appears very definitely that there are more accidents and they occurred more frequently in proportion to trains handled or traffic moved in short-train territory than in long-train territory. Reference is made to the findings of fact for details to support this statement.

The frequency of train and train-service accidents, which includes grade-crossing accidents, appears to be directly related to the number of train units operated and that when more train units are run than are necessary to handle a given amount of traffic, the hazard or accidents in the handling of such traffic is correspondingly increased. When one considers that in the year 1938, for instance, that 30.8% or 4,304 more freight trains were operated between Yuma and El Paso than were actually necessary if it had not been [fol. 6293] for this law, it becomes apparent why the casualty rate is higher in Arizona.

Also it is clear that the reason defendant is unable to effect improvements in the efficiency and economy of its freight-train operations in Arizona comparable to those achieved in neighboring states, or upon its system generally, is primarily due to the restrictions imposed by the Arizona law.

In arriving at a decision in this case I have not overlooked, nor minimized, the type of casualty caused by the sudden start, stop, lurch and jerk of the train or car, commonly known as slack-action casualties, which are so dreaded by every trainman. While slack action cannot be prevented, it must be controlled. A certain amount of slack is absolutely necessary to train operations. It cannot be denied that the addition of each car to a train adds just that much more potential slack, which must be effectively handled by the engineer if serious accidents are to be avoided. To the credit of the locomotive engineers of the United States, be it said that they have, with the improved equipment and devices furnished them, manifested greater skill and exercised more care in handling these longer trains with their heavier locomotives to the extent that over a seventeen-year period (1923-1939) only six per cent of the over-all casualties were caused by this type of accident. It must also be remembered that there are many factors besides length of train causing slack-action casualties, such as: grades, speed of train, consist of train and whether loaded or empty. The record shows many severe casualties of this type on short trains. Limiting trains to the Arizona maxima has had no perceptible limiting effect on even that class of accidents, but if it had, surely it would not be argued that the law was aimed at a definite class of hazards, to-wit: slack-action accidents, which represents but six per cent of the whole, and that the law must stand regardless of its effect on all the other [fol. 6294] classes of accidents representing ninety-four per cent of the casualties, all of which showed material increase due to the effect of the law.

Essentially then the question is not whether a given number of long trains may be operated with fewer casualties than an equal number of short trains, but rather whether the long-train method of moving the entire volume of traffic results in fewer casualties, of all classes, than the movement of the traffic in a larger number of trains of restricted length.

In determining then whether the law bears any reasonable relation to safety, only the over-all result in casualties of the entire operation should be considered and when thus weighed it is clear that the law not only does not in-

crease safety of train operations in Arizona, but that as a matter of cold fact it makes these short-train operations more dangerous.

Thus the Arizona Train-Limit Law not only bears no reasonable relation to safety but, to the contrary, does, and if enforced will continue to, impair and lessen substantially the safety of defendant's train operations in Arizona and the adjacent affected territory.

Defendant established that if the law were invalidated it contemplated the undertaking of an immediate program to build or extend its sidings and yard tracks at forty-nine different stations so as to provide suitable trackage permitting the efficient operation of long trains. Furthermore, larger locomotives of the AC-8 type, having much greater tractive power, would be assigned to the Tucson division. This change in motive power would also necessitate reconstructing certain roundhouses and turntables and providing additional repair facilities. It was estimated that these changes would involve the expenditure of more than a million dollars.

Before closing this opinion, may I say that the arduous [fol. 6295] task of the Court has been made much easier by the very able and comprehensive manner in which the Attorneys for both of the parties have briefed both the law and the facts; I compliment each of you on the skill manifested. This assistance has been appreciated, as has all of the courtesies which were extended throughout the long trial.

At the close of the trial both parties requested the Court to make findings of fact and conclusions of law. Thereupon the Court asked that counsel for the parties submit proposed findings, which request in due time was complied with. Being now of the opinion that the findings of fact submitted by the defendant, consisting of some 200 printed pages, are well supported by the record, the Court therefore adopts in toto these findings of fact and conclusions of law as its own. These have been signed and are now filed with the Clerk as a compliance with Section 21-1027, A. C. A., 1939.

It necessarily follows from what has been said that the Court considers the Train-Limit Law as being wholly void, invalid and unenforceable as to the interstate operations of the defendant, by reason of being in conflict with the

Commerce Clause and the Due Process Clause (Fourteenth Amendment) of the Constitution of the United States, as well as the Due Process Clause of the Constitution of the State of Arizona. The Defendant is, therefore, entitled to judgment, dismissing the Plaintiff's Complaint, and each count thereof, and for its costs of suit herein expended. It is so ordered.

Done in open Court this 11th day of February, 1942.

Levi S. Udall, Presiding Judge in the above Entitled Case.

[fol. 6296]

[File endorsement omitted]

IN THE SUPERIOR COURT OF THE STATE OF ARIZONA IN AND
FOR THE COUNTY OF PIMA

NOTICE OF APPEAL—Filed April 9, 1942

[Title omitted]

Notice is hereby given that the above named plaintiff, State of Arizona, appeals to the Supreme Court of the State of Arizona from the judgment rendered and entered in the above entitled Court in the above entitled cause on the Eleventh (11th) day of February, 1942, in favor of the above named defendant, Southern Pacific Company, a corporation, and against said plaintiff, State of Arizona, and from the whole thereof.

Dated this 8th day of April, 1942.

Joe Conway, Attorney General, W. E. Folley, Assistant Attorney General; Charles L. Strouss, Of Counsel.

[fol. 6297] IN THE SUPREME COURT OF ARIZONA.

No. 4525

STATE OF ARIZONA, ex rel. Joe Conway, Attorney General
of the State of Arizona, Appellant,

vs.

SOUTHERN PACIFIC COMPANY, a Corporation, Appellee

Appeal from the Superior Court of Pima County. Honorable Levi S. Udall, Judge. Judgment Reversed.

Joe Conway, Attorney General, Earl Anderson, Assistant Attorney General, Charles L. Strouss, of Counsel, all of Phoenix, Arizona, Attorneys for Appellant.

Cleon T. Knapp, James P. Boyle, B. G. Thompson, all of Tucson, Arizona; Henley C. Booth, Burton Mason, both of San Francisco, California; Attorneys for Appellee.

OPINION—Dec. 23, 1943

STANFORD, J.:

This action is brought under the provisions of Section 69-119, Arizona Code Annotated, 1939, (Laws, 1913, Referendum, p. 15; Sections 2166-2168, Revised Statutes of Arizona, 1913; Civil Code; Section 647 Revised Code of Arizona, 1928), being the act commonly called the Train Limit Law, and was brought for the purpose of recovering from defendant penalties as provided by the act. The charge in the complaint is that on March 12, 1940, the defendant [fol. 6298] operated a passenger train of more than 14 cars, and on April 4, 1940, the defendant operated a freight train of more than 70 cars, in violation of said law.

The aforesaid statute reads as follows:

“Section 1. It shall be unlawful for any person, firm, association, company or corporation, operating any railroad in the state of Arizona, to run, or permit to be run, over his, their, or its line of road, or any portion thereof, any train consisting of more than seventy freight or other cars, exclusive of caboose.

“Section 2. It shall be unlawful for any person, firm, association, company or corporation, operating

any railroad in the state of Arizona, to run, or permit to be run, over his, their, or its line or road, or any portion thereof, any passenger train consisting of more than fourteen cars.

"Section 3. Any person, firm, association, company or corporation, operating any railroad in the state of Arizona, who shall wilfully violate any of the provisions of this act, shall be liable to the state of Arizona for a penalty of not less than one hundred dollars, nor more than one thousand dollars, for each offense; and such penalty shall be recovered and suits therefor brought by the attorney general, or under his direction, in the name of the state of Arizona, in any county through which such railway may be run or operated, provided, however, that this act shall not apply in cases of engine failures between terminals.

"Section 4. All acts and parts of acts in conflict with the provisions of this act are hereby repealed."

The case was tried in Tucson, Pima County, Arizona, before the Honorable Levi S. Udall, Judge of the Superior Court of Apache County, Arizona, to whom it had been assigned.

By the judgment rendered it was held that the Train Limit Law of Arizona, as set forth in the sections above quoted, was unconstitutional and void because:

[fol. 6299] "First: Said statute invades the exclusive legislative field of Congress, as limited and defined by the Commerce Clause (par. 3, of Sec. 8, Art. 1) of the Constitution of the United States;

"Second: Said statute imposes direct, unreasonable and unlawful burdens upon, and interferes with, delays and obstructs interstate commerce, in violation of said Commerce Clause;

"Third: Said statute impairs the use and usefulness of the transportation facilities employed by defendant as a common carrier engaged in interstate commerce;

"Fourth: Said statute is in conflict with and infringes upon, and amounts to an unlawful attempt to supplement, the power-brake provisions of the Federal Safety Appliance Acts, and the safety-device provi-

sions of Section 25 of the Interstate Commerce Act, which Federal statutes operate upon the same subject matter and are directed to the same objects as said Train-Limit Law and by which said statutes Congress has completely and exclusively occupied the field of regulation of train lengths;

"Fifth: Said statute operates unreasonably and arbitrarily to deprive defendant of its property, without due process of law, in violation of both the Due-Process Clause of the Fourteenth Amendment to the Constitution of the United States, and the Due-Process Clause set forth in Section 4 of Article 2 of the Constitution of the State of Arizona;"

Appellee has admitted the operation of the trains as alleged in the complaint, but alleged that each of said trains consisted in a large part of cars moving in Interstate Commerce and carrying interstate traffic, and in further explanation of appellee's case, we quote as follows:

"* * * and denied that either of said operations was a wilful violation of the law. For a further separate and affirmative defense to the complaint, appellee alleged that the law was and is void, invalid and unconstitutional, because in violation of the Commerce Clause (Article I, Section 8, para: 3) of the Constitution of the United States, the Due-Process Clause of Section 1 of the 14th Amendment of the Constitution of the United States, and the corresponding Due-Process Clause set forth in Article II, Section 4, of the Constitution of Arizona, in that: (a) the law undertakes to regulate a subject-matter of national concern which, if required [fol. 6300] to be regulated at all, is subject to regulation only by Congress pursuant to the powers granted by the Commerce Clause; (b) the necessary effect of the law is to regulate appellee's train operations extra-territorially, that is to say, beyond the boundaries of Arizona; (c) the law directly and substantially interferes with, delays, and regulates appellee's interstate train operations in Arizona and the adjacent states; (d) the law imposes direct and substantial burdens upon the appellee's interstate train operations; (e) the law, to the extent that it has, or is intended or claimed to have, the effect of limiting the number of cars in a

train to that number which can be safely and effectively controlled or stopped by the use of air brakes and other appurtenances now in use on such trains, is in conflict with and an infringement upon existing Federal legislation having the same or similar purposes, enacted by Congress pursuant to its powers under the Commerce Clause; (f) the law deprives appellee of its property unreasonably and arbitrarily, in violation of the due-process clauses of the State and Federal Constitutions above referred to, for the reason, among others, that it bears no reasonable relation to health or safety, its ostensible objects, and does not eliminate or reduce any present hazard, but on the contrary creates certain hazards which would not otherwise exist, and increases other hazards of railroad operation in numerous respects."

In 1912, the year Arizona became a state, several measures were referred, under the Constitutional Act of Initiative and Referendum, to the people after their passage by the legislature. Among those measures, besides the one in question, the Train Limit Law, each had to do with the regulation through the police power of the state of railroads in Arizona for the health and safety of its employees and traveling public. That will be observed, first, by the act regulating the number of men to be employed on trains and engines; second, by the act regulating head lights on all locomotives (for example, in this particular act, it was required that locomotive engines used in the transportation of trains over railroads should install electric head lights of a certain power); and third, by the act to require certain tests of service before a person could serve as a locomotive [fol. 6301] engineer or train conductor. It can be easily seen that all of these acts, including the one in question in this action, were made the laws of this state for the purpose of the safety and protection of employees and of the people being transported over the railroads in our state.

Appellee contends in its brief, as it did by a statement before the court in argument that "it is much more probable that the law was advocated and passed as a measure to promote and preserve—make static—the employment of railroad trainmen. Certainly that is its most obvious practical (but extra-legal) purpose and, as experience has shown, one of its principal results." We have just quoted

the title to other acts, as well as this one, enacted in the year 1912 by the State Legislature. All of them have to do with the regulation of the handling of trains in order to protect the employees or traveling public as will be seen by the various acts, and no other reason could possibly be assigned to those acts, including, as stated, the one in question here. The case of *State vs. Pate*, (N. M.), 138 Pac. (2d) 1006, states: "The courts do not inquire into the motives of the legislature."

16 C. J. S. page 277, Sec. 100, has the following to say in connection with legislative acts:

"It will be presumed that the legislature, in passing a statute, acted advisedly and with full knowledge of existing facts and conditions on which its legislation is based, and that no general laws are ever passed either through want of information on the part of the legislature or because it was misled by false representations of interested parties. It will also be presumed that the legislature carefully investigated and properly determined that the interests of the public required the enactment of particular legislation. So, the court will presume that the legislature in enacting [fol. 6302] a regulatory measure had adequate knowledge of the evils sought to be corrected and did not act arbitrarily or unreasonably."

In *State vs. Wisconsin Telephone Co.*, 172 N. W. 225, 169 Wis. 198, it is said:

- "The term 'police power' is very elastic and is used to express different meanings at different times. In its broadest sense, it has been said to include 'all legislation and almost every function of civil government.'"

The case of *Salem Lodge vs. Swaile*, 197 N. E. 837, 209 Ind. 347, expresses the opinion that when a subject lies within the police power of the state, debatable questions as to reasonableness are not for the courts, but for the legislature which is entitled to form its own judgment, and its action within its range of discretion cannot be set aside because compliance is burdensome.

In the case of *State vs. Superior Court*, 174 Pac. 973, 103 Wash. 409, it is stated:

"Indeed, it may be said that, where the police power is set in motion in its proper sphere, the courts have no

jurisdiction to stay the arm of the legislative branch of the government, for it is operating in its own particular field, where even the courts are powerless to insist upon a procedure consistent with the forms of the common law."

Dwelling for the present on the contention of the appellee that the law is in conflict with the Fourteenth Amendment, we refer to the case of *Barbier vs. Connolly*, 113 U. S. 923, reading as follows:

"* * * But neither the Amendment, broad and comprehensive as it is, nor any other amendment was designed to interfere with the power of the State, sometimes termed its 'police power,' to prescribe regulations to promote the health, peace, morals, education and good order of the people, and to legislate so as to increase the industries of the State, develop its resources and add to its wealth and prosperity. From the very necessities of society, legislation of a special character, having these objects in view, must often be [fol. 6303] had in certain districts, such as for draining marshes and irrigating arid plains. Special burdens are often necessary for general benefits, for supplying water, preventing fires, lighting districts, cleaning streets, opening parks, and many other objects. Regulations for these purposes may press with more or less weight upon one than upon another, but they are designed, not to impose unequal or unnecessary restrictions upon anyone, but to promote, with as little individual inconvenience as possible, the general good. Though, in many respects, necessarily special in their character, they do not furnish just ground of complaint if they operate alike upon all persons and property under the same circumstances and conditions. Class legislation, discriminating against some and favoring others, is prohibited; but legislation which, in carrying out a public purpose, is limited in its application, if within the sphere of its operation it affects alike all persons similarly situated, is not within the Amendment."

Appellee has brought to the attention of the court six certain cases in which it places great reliance. The first one is the case of *A. T. & S. F. Ry. Co., et al., vs. LaPrade*

(1933) 2 Fed. Supp. 855. This case was tried by one Circuit Judge and two District Judges. In this case counsel in their brief have to say:

"The conclusions expressed by that opinion were given no effect solely because of the holding of the United States Supreme Court in *Ex parte LaPrade* (1933), 289 U. S. 444; 77 L. ed. 1311, which decided that the suit had abated because of the substitution of the incoming attorney general for the original defendant. The Supreme Court considered no other question."

The second is the *Southern Pacific Company vs. Mashburn*, (1937), 18 Fed. Supp. 393. This case was tried before one Circuit Judge and two District Judges. That case was decided against the validity of the Nevada law which was patterned after the Arizona law.

The third case was *Texas & New Orleans R. Co., vs. Martin, et al.*, (1936). This is known as the Louisiana case and was heard by one Circuit Judge and two District Judges. It is an unreported case but the court made permanent the interlocutory injunctions issued prohibiting interference of the railroad in that state.

[fol. 6304] The fourth case is the case of *M. K. & T. R. Co., vs. Williamson*, 36 Fed. Supp. 607, known as the Oklahoma case. That case is like the Nevada Train Limit case except that it has reference to freight trains only. This case was heard and decided by the two Circuit Judges, District Judge Vaught dissenting.

The fifth case is *State, etc. vs. A. T. & S. F. Ry. Co., et al.*, 125 Kans. 586; 264 Pac. 1056, a Kansas case heard by the State Supreme Court. The state, through its Public Service Commission, attempted to compel, by mandamus proceedings, the railroad company to put into effect certain orders prescribed by it relating to manual signals to be used by train crews and relating to the air and power brake system, and in part, the holding of that state court was that such an order could not be enforced by mandamus where no showing was made that a better system had been devised. The unanimous judgment was rendered for the railroad company.

The sixth case is *Southern Pacific Company vs. Railroad Commission of California*, 10 Fed. Supp. 918. In that case the Railroad Commission of California had ordered that

certain trains moving between certain points during the six winter months be operated with an additional caboose, to be placed midway in the train. The opinion in this case was given by one Circuit and two District Judges upholding the railroad company.

In connection with the foregoing six cases we quote a statement, or contention, of the appellee herein as follows:

"It will be noted that the four Federal train-limit cases were heard before twelve different Federal judges, five of whom were Circuit judges and seven [fol. 6305] District judges. Three of the Circuit judges and all of the District judges, or ten Federal judges in all, have agreed that state train-limit laws exactly or essentially similar to the challenged law are invalid, upon precisely the same constitutional grounds urged in the present case. Only two of these twelve judges have taken a contrary view.

"Three of the ten Federal judges mentioned have also concurred in reaching the same result with respect to a state regulation not differing in principle from a train-limit law; although, of course, neither the volume of the traffic affected, the character and extent of the interference imposed, nor the financial burden was as severe and widespread as in the train-limit cases."

The State of Oklahoma, one of our latest additions to statehood in the union; no doubt was desirous of enacting laws that would be progressive, that would be for the safety of the traveling public through its state and for the employees on its trains. Regardless of the reasoning of the appellee herein, as above set forth, as to the total number of various judges who have in the aggregate given opinions that would overwhelm the Oklahoma case, nevertheless the Oklahoma case was not tried by state judges and it is the latest case quoted by appellee herein, and while this court is not bound to follow, it is certainly most fitting to do so.

There are something like 325 cases cited by the two parties to this action, and it would be impossible to make reference to all of them. The case of *M. K. & T. R. Co., vs. Williamson*, supra, is replete with the cases cited by both sides in this case, and Circuit Judge Bratton, who wrote the opinion in that case, gave expression of the court to most all the cases cited in the case. In that case, like the one at bar,

the railroad company was compelled, among other things, to expend great sums of money in order to comply with the restrictions placed by the State of Oklahoma, and by in- [fol. 6306] junction the railroad company sought to be relieved of the necessity of such great additional expense. We quote from said case as follows:

"It is contended with emphasis that the statute, applied to the business of plaintiff, is not a safety measure reasonably enacted in the exertion of the police power of the state, but is merely an attempt to regulate, delay and burden interstate commerce, in violation of the Commerce Clause. The supreme, plenary and complete power of Congress to regulate interstate commerce is without limitation or restriction, except that prescribed in the Constitution; and within the reach of that paramount authority lies the power to protect such commerce against substantial dangers, burdens or obstructions, no matter the source from which the encroachment springs. *Gibbons v. Ogden*, 9 Wheat. 1, 6 L. Ed. 23; *Minnesota Rate Cases* (*Simpson v. Shepard*), 230 U. S. 352, 398, 33 S. Ct. 729, (citing many other cases.) Coming to apply the well-recognized doctrine many state and municipal enactments have been held invalid. (citing cases).

"But every state statute having some relation to interstate commerce is not to be condemned on that ground. A state is free in the exertion of its police power to enact reasonable measures in the interest of the health, safety and welfare of its people, including employees of railroads, passengers on trains, and others, even though interstate commerce may be incidentally or indirectly involved. . . . It is crystal clear that the general principle running through all of these cases is that a state statute, enacted in the exercise of the police power, and bearing some reasonable relation to the health, safety, or well-being of the people of the state, is not to be overturned by judicial decree, even though by its necessary operation it affects interstate commerce in an incidental or indirect manner, but not otherwise. . . .

"Plaintiff relies upon the due process clause of the Fourteenth Amendment. It is obvious that to comply with the statute plaintiff will be required to expend

additional sums in the operation of its business. The cost of compliance with a statute of this kind is an element for appropriate consideration in determining whether the statute is arbitrary, capricious, or repugnant to due process; but, standing alone, it is not always enough to warrant judicial determination of invalidity. *Missouri Pacific Railway Co. v. Kansas*, 216 U. S. 262, 30 S. Ct. 330, 54 L. Ed. 472; *Lehigh Valley Railroad Co. v. Board of Public Utility Commissioners*, 278 U. S. 24, 49 S. Ct. 69, 73 L. Ed. 161, 62 A. L. R. 805; *Missouri Pacific Railroad Co. v. Norwood*, *supra*. The facts presented are not sufficient to distinguish or set apart this case from those to which reference has been made in which statutes enacted in the exercise of the police power of the state were sustained, although interstate commerce was incidentally and indirectly affected and the expenditure of additional sums was necessitated.

[fol. 6307] "The remaining contention to be considered is that the statute must fall because Congress has occupied the field; that the act infringes and is in conflict with legislation heretofore enacted by Congress pursuant to its powers under the Commerce Clause. To sustain the contention, plaintiff relies upon paragraphs 10 to 17 and paragraph 21 of section 1, and section 26, of the Interstate Commerce Act, as amended, 49 U. S. C. A. Pars. 1, 26; and sections 1 and 9 of the Safety Appliance Act, as amended, 45 U. S. C. A. Pars. 1, 9. Paragraph 10, section 1, of the Interstate Commerce Act, as amended, defines the term 'car service'; paragraph 11 makes it the duty of a railroad company to furnish safe and adequate car service, and to enforce just and reasonable rules, regulations, and practices in respect of car service; paragraph 12 relates to the distribution of cars for the transportation of coal; paragraph 13 authorizes the Commission to require railroads to file with it their rules and regulations relating to car service, and empowers the Commission to direct that such rules and regulations be incorporated in the schedules showing rates, fares and charges for transportation; paragraph 14 authorizes the Commission to establish rules, regulations, and practices touching car service; paragraph 15 is addressed to the furnishing of car service and the use of facilities in case of short-

age of equipment, congestion of traffic, or other emergency, paragraph 16 empowers the Commission to make just and reasonable directions in respect to the handling, routing, and movement of traffic over other lines; paragraph 17 requires railroad companies to obey orders of the Commission concerning car service, and provides a penalty for disobedience; and paragraph 21 vests in the Commission authority to require any railroad to provide itself with safe and adequate facilities for performing its car service, and fixes a penalty for refusal or neglect to comply with such an order; and section 26 authorizes the Commission to order a railroad to install automatic train-stop or train-control devices or other safety devices, and fixes a penalty for the refusal or neglect to comply with such an order. Section 1 of the Safety Appliance Act, as amended, provides that no railroad company shall use on its line any locomotive in moving interstate traffic not equipped with a power driving-wheel brake and appliances for operating the train-brake system, and that no train shall be run in such traffic that does not have a sufficient number of cars in it equipped with such power and train brakes that the engineer on the locomotive can control its speed without requiring brakemen to use the common hand brake for that purpose; and section 9 provides that whenever a train is operated with power or train brakes not less than fifty per cent of the cars shall have their brakes used and operated by the engineer, that all power-braked cars in the train which are associated together, with such fifty per cent shall have their brakes so used and operated that the Interstate Commerce Commission may, from time to time, [fol. 6308] increase the minimum percentage of cars required to be operated with power or train brakes, and that failure to comply with any such requirement shall subject the company to a penalty.

"In respect to the regulatory power of the state and the occasions for its exercise, the general subject of commerce has been divided into three separate and distinct classes. They are those in which the power of the state is exclusive, those in which the state may act in the absence of legislation by Congress, and those in which the action of Congress is exclusive and therefore the state cannot act at all (citing cases). The

reasonable limitation of the length of trains in the interest of public safety falls within the second class. As to that class, the exercise of the paramount power of Congress is necessary to take from the state its subordinate power to legislate. *Covington & Cincinnati Bridge Co. v. Kentucky*, *supra*; *Western Union Telegraph Co. v. James*, *supra*. And mere congressional delegation of power to the Interstate Commerce Commission to act in respect to that class does not require the state to yield. It is only after action by the Commission that the state is shorn of its power (citing cases). But the intent of Congress to exert its superior authority and thus exclude or supersede state legislation concerning the same matter is not to be lightly inferred. It must be fairly manifested (citing cases). And, it is within the power of Congress to limit its regulation to only part of a given field, thus leaving the remainder open to action by the state (citing cases).

"The acts of Congress relied upon fail to make specific reference to the length of trains as an element of safety, and it is not contended that the Interstate Commerce Commission has acted or asserted its authority to act in respect of the matter under the powers which Congress has delegated to it. True, some if not all of the statutes concern themselves with various aspects of safety in the operation of trains. But, fairly construed, they do not contain any provision from which it can be reasonably implied that Congress intended to exert the paramount character of its authority in relation to the length of trains in such manner as to exclude or supersede state action. And until an intent to exercise such superior authority has been indicated, the state is free to legislate in the exertion of its police power"

It has come to our attention that the Interstate Commerce Commission in relation to the Transportation Act of 1940 has recently commented on that Act as follows:

"It is unnecessary to decide whether Congress has occupied the field of safety regulation with respect to [fol. 6309] the operation of trains or with respect to the length of trains. In any event, that is a question for the courts. The question before us is whether, in view of the emergency found to exist, we were author-

ized by law to suspend the operation of State laws limiting the number of cars in a train."

The emergency referred to, of course, has reference to the suspension of the Train Limit Law for the duration of the war, and to which this state has unhesitatingly yielded.

From the case of *People vs. Letford*, 79 Pac. (2d) 274, 102 Colo. 284, we quote the following:

"In approaching the question of the validity and constitutionality of the statute, it is well to keep in mind certain fundamental rules. When an act of the Legislature is attacked on the ground of unconstitutionality, the question presented is not whether it may be voided but whether it is possible to uphold it. *Denver v. Knowles*, 17 Colo. 204, 30 P. 1041, 17 L. R. A. 135. Every presumption will be indulged in favor of the legislation and only clear and demonstrable usurpation of power will authorize judicial interference with legislative action. *Green v. Frazier*, 253 U. S. 233, 40 S. Ct. 499, 64 L. Ed. 878. The rule was well stated by the Supreme Court of Massachusetts in *Re Wellington et al.*, Petitioners, 16 Pick. 87, 26 Am. Dec. 631, and quoted with approval by us in *Milheim v. Moffat Tunnel District*, 72 Colo. 268, 273, 211 P. 649, 651, as follows: 'When called upon to pronounce the invalidity of an act of legislation passed with all the forms and solemnities requisite to give it the force of law, courts will approach the question with great caution, examine it in every possible aspect and ponder upon it as long as deliberation and patient attention can throw any new light on the subject, and never declare a statute void, unless the nullity and invalidity of the act are placed, in their judgment, beyond reasonable doubt.' "

The trial court took from the 19th day of November to the first of the following May in the trial of this cause, excepting some recesses. There were 886 assignments of error and 39 propositions of law presented to us, and of the many scores of cases cited by both appellant and appellee, this court has read as many as possible to be consistent in rendering justice to both sides. The matter has engrossed the attention of this court, as time would permit, [fol. 6310] since its presentation in April, 1943, until this time, but the opinion, condensed as it is in the foregoing

pages, expresses our reason for holding that the findings and judgment of the trial court to the effect that the Train Limit Law is unconstitutional were in error.

We cannot impugn the motives of the legislature of our state, and in this particular case the purpose of the citizenry of our commonwealth by disturbing the enactment of this law made by them until we find that it is in violation of a law to which the state must yield.

The judgment is reversed.

R. C. Stanford, Judge.

Concurring:

A. G. McAlister, Chief Justice.

[fols. 6311-6312]-Ross, J.:

I dissent. My reasons will be given later. Illness prevents my doing so at this time.

I think the judgment of the lower court should be affirmed.

Henry D. Ross, Judge.

[fol. 6313] IN THE SUPREME COURT OF ARIZONA

No. 4525

STATE OF ARIZONA, ex Rel. JOE CONWAY, Attorney General
of the State of Arizona, Appellant,

vs.

SOUTHERN PACIFIC COMPANY, a Corporation, Appellee

Appeal from the Superior Court of Pima County. Honorable Levi S. Udall, Judge

Judgment reversed in opinion of December 23, 1943.

Joe Conway, Attorney General, Earl Anderson, Assistant Attorney General, Charles L. Strouss, of Counsel, all of Phoenix, Arizona, Attorneys for Appellant.

Cleon T. Knapp, James P. Boyle, B. G. Thompson, all of Tucson, Arizona; Henley C. Booth, Burton Mason, both of San Francisco, California, Attorneys for Appellee.

DISSENTING OPINION—January 13, 1944

Ross, J. (Dissenting):

When the opinion in this case was handed down on December 23, 1943, I was unable, because of illness, to give my reasons for dissenting. I now do so.

The validity of the Arizona Train Limit Law (section 69-119, Arizona Code 1939) as applied to interstate transportation of persons and property is the question for decision. Such law undertakes to penalize any railroad in [fol. 6314] the State of Arizona that runs over its lines, or any part thereof, any train consisting of more than 70 freight, or other cars, exclusive of caboose, or any passenger train of more than 14 cars.

The act is silent as to its purpose. If it was enacted to protect the safety, health and well-being of railroad employees, or the traveling public, it does not so recite, as in the Williamson case (36 Fed. Supp. 607) cited in the majority opinion.

The laws observance until now by the interstate railroads operating in Arizona, as the evidence and findings conclusively show, has not only cost such utilities large sums of money but, also, has delayed and interfered with their business of transportation of goods and persons, at both the east and west boundaries of the state, without any material benefit to the traveling public, in the way of safety or health, or of the employees unless it be that more of them thereby have secured employment, increasing the operating expenses of the roads.

One sure result of a compliance with the law has been to force interstate companies to operate many more trains in the conduct of their business than the safety and well-being of the employees would seem to require, greatly increasing their costs.

Under the law, a fruit or cattle train made up in California for the Kansas City or Chicago Markets, if it consists of more than 70 cars, must, when or before it reaches, Yuma, Arizona, be broken down to the limit of 70 cars before it proceeds through Arizona. When this same train has crossed Arizona it may be rebuilt to the California length and proceed on its course to the point of destination. The traffic from the east to California must also conform [fol. 6315] to this arbitrary rule at the state's boundary. In effect, the law limits length of trains from California and New Mexico to and through Arizona and practically outside of the state.

The regulation of the length of interstate trains, if permissible, is by reason of the state's right under the constitution to pass laws for the protection of its people's lives, safety, health and well-being and to do that the state may

enter the field appropriated under the federal constitution to the federal government, when such field has not been wholly occupied by that government. Powers belonging under the constitution to the federal government but not exercised may in all proper cases be exercised by the state for its use and protection, and a state law to that end will be valid and enforceable.

The Train Limit Law, if an allowable state regulation originally, is no longer allowable for the following reasons:

1. The danger to life and health in the operation of long trains, because of the improvement in the operating services as shown by the evidence and findings, has been greatly minimized, if not wholly done away with.

2. That because of such improvement, if the Train Limit Law was ever a valid police regulation, it now, under the evidence, serves but one purpose, to wit, the employment of more employees and trains, with the expense and hazards incident thereto.

3. It invades the field of regulation occupied by the Congress in its legislation providing for safety appliances in railroad operations (*Virginian Ry. v. United States* (1915), 223 Fed. 748) and the safety provisions of the Interstate Commerce Act.

[fol. 6316] 3. In *Ex Parte No. 156*, November 8, 1943, the Interstate Commerce Commission refused to modify its Service Order No. 85, theretofore entered, suspending during the war the operation of state laws limiting the number of cars in trains, stating, among other things:

"If state laws limiting the number of cars in trains are to be held valid (a question we do not decide), it would be possible for each state to set a different number of cars as the maximum to be hauled in a train. A state might even limit the length of trains to one car, although such a law would be clearly arbitrary and unreasonable. Higher limits might be set by states and found reasonable, but lack of uniformity would place a serious burden on interstate commerce. * * *

"The fact that freight trains in excess of 70 cars and passenger trains in excess of 14 cars are safely operated in states without train-limit laws 'is convincing evidence of its safety, except where unusual operating conditions exist.' * * *

"We find that these state laws were and are in fact rules and regulations with respect to car service within the meaning of section 1, paragraph (10) and (15); that Service Order No. 85 was and is in accord with the national transportation policy . . . and is fully authorized by section 1 . . . of the Interstate Commerce Act."

The Interstate Commerce Commission refused to modify or change said Service Order No. 85 for the reasons (a) that it was a valid order made pursuant to act of Congress and (b) because as a matter of fact "freight trains in excess of 70 cars and passenger trains in excess of 14 cars are safely operated in states without train-limit laws", which "is convincing evidence of its safety, except where unusual operating conditions exist." This finding of fact by the Commerce Commission is fully and well supported by the evidence taken in this case and is in accord with the learned trial court's findings.

[fols. 6317-6318] Four states, Arizona, Nevada, Louisiana and Oklahoma, have enacted train limit laws. The laws in the first three named states have been passed upon and declared to be invalid (*Atchison, T. & S. F. Ry. Co. v. La Prade*, 2 Fed. Supp. 855; *Southern Pacific Co. v. Mashburn*, 18 Fed. Supp. 393; *Texas & New Orleans R. Co. v. Martin et al* (1936, unreported), No. 428-Equity), in Oklahoma it was sustained by a divided court (*Missouri-Kansas-Texas R. Co. v. Williamson*, 36 Fed. Supp. 607). The rulings of these courts is another very cogent reason why the Train Limit Law should not be sustained. These decisions were by three-judge federal courts and were unanimous in holding the law invalid, except in the state of Oklahoma. In other words, of the 12 judges presiding in these cases 10 joined in declaring the law invalid and two (in the Oklahoma case) sustained the law.

I think the judgment of the lower courts should be affirmed.

Henry D. Ross, Judge.

[fol. 6319] IN THE SUPREME COURT OF THE STATE OF ARIZONA

MANDATE—Filed in Superior Court Jan. 15, 1944

To the Honorable the Superior Court of the State of Arizona in and for the County of Pima

Greeting: whereas, lately in the Superior Court of the State of Arizona in and for the County of Pima, before you in a cause between: State of Arizona, ex rel. Joe Conway, Attorney General of the State of Arizona, Plaintiff, vs. Southern Pacific Company, a corporation, Defendant, No. 20087, the said Superior Court made and entered its judgment on February 11, 1942, as follows:

"Now, therefore, it is hereby ordered, adjudged and decreed:

(a) That said Train-Limit Law is wholly void, invalid and unenforceable, as to said defendant, and each and all of its trains carrying any interstate commerce or traffic, or engaged in interstate transportation, upon each and all of the grounds hereinbefore set forth;

(b) That defendant is not liable to plaintiff by reason of any of the matters or circumstances alleged in the complaint herein, or otherwise, either for the sums demanded as penalties in said complaint, or for any other sum or amount whatever;

(c) That plaintiff take nothing by its action;

(d) That defendant do have and recover from plaintiff its costs of suit herein, in the sum of \$

Dated: This 11th day of February, 1942.

Levi S. Udall, Judge of the Superior Court of the State of Arizona."

[fol. 6320] as by the inspection of the record of the said Superior Court, which was brought into the Supreme Court of the State of Arizona by virtue of an appeal by plaintiff agreeably to the law in such case made and provided fully and at large appears.

[fol. 6321] And whereas, in April, in the year of our Lord one thousand nine hundred and Forty-three, the said

cause came on to be heard before the said supreme court, and was submitted for decision after argument of counsel.

On consideration whereof, it was on the 23rd day of December in the year of our Lord one thousand nine hundred and forty-three, ordered by this Court that the judgment of the said Superior Court in this cause, entered February 11, 1942, be, and the same is hereby reversed. Costs in this court to said appellant State of Arizona of and from said appellee Southern Pacific Company on cost bill duly filed and allowed.

Whereupon, appellee filed its motion for rehearing, on consideration of which, with the reply and objections of appellant, it was, on January 13, 1944, ordered that the motion for rehearing be denied.

[fol. 6322] You therefore are hereby commanded, that such proceedings be had in said cause, as according to right and justice, and to law, ought to be had, the said Appeal notwithstanding.

Witness, the Honorable A. G. McAlister, Chief Justice of the Supreme Court of the State of Arizona, the Fourteenth day of January, in the year of our Lord one thousand nine hundred and Forty-four.

Costs of no cost bill filed.

Eugenia Davis, Clerk of the Supreme Court of the State of Arizona.

[fol. 6323] [File endorsement omitted]

IN THE SUPERIOR COURT OF THE STATE OF ARIZONA IN AND
FOR THE COUNTY OF PIMA

No. 20087

STATE OF ARIZONA, ex rel. JOE CONWAY, Attorney General
of the State of Arizona, Plaintiff,

vs.

SOUTHERN PACIFIC COMPANY, a corporation, Defendant

JUDGMENT ON MANDATE OF SUPREME COURT—Filed Feb. 5,
1944

The above entitled cause coming on regularly before the Court this 5th day of February, 1944, on the opinion and

mandate of the Supreme Court of the State of Arizona,
It is now ordered, adjudged and decreed:

1. That the Arizona Train Limit Law is constitutional and valid:

2. That plaintiff have and recover judgment against the defendant:

(a) on plaintiff's first cause of action, in the amount of \$250.00;

(b) on plaintiff's second cause of action, in the amount of \$250.00;

(c) for plaintiff's costs herein in the amount of \$ none.

Dated this 5th day of February, 1944.

Levi S. Udall, Judge.

[fol. 6324]

[File endorsement omitted]

IN THE SUPREME COURT OF ARIZONA

[Title omitted]

PETITION FOR APPEAL FROM THE SUPREME COURT OF THE
STATE OF ARIZONA TO THE SUPREME COURT OF THE UNITED
STATES—Filed March 8, 1944

To the Honorable, the Chief Justice of the Supreme Court
of the State of Arizona:

Southern Pacific Company, a corporation, your petitioner, respectfully shows:

1. Petitioner is the appellee in the above entitled cause.

2. The above named appellant filed a complaint in the Superior Court of the State of Arizona, in and for the County of Pima, on the 19th day of April, 1940, against your petitioner as defendant, seeking to recover penalties for two asserted violations of Section 69-119, Arizona Revised Code Annotated, 1939, the statute of Arizona known as the Arizona Train Limit Law. After trial of said cause in said Superior Court judgment therein was rendered in favor of your petitioner as defendant, adjudging said Train Limit

Law to be unconstitutional because in violation of the Constitutions of the United States and the State of Arizona.

[fol. 6325] 3. An appeal was thereupon taken from said judgment to the Supreme Court of the State of Arizona. Said Supreme Court is the highest court of the State of Arizona and therefore the highest court of said State in which a decision in this suit could be had. Upon said appeal said judgment was reversed, by a decision rendered by said Supreme Court of Arizona on the 23rd day of December, 1943. Thereafter your petitioner filed its motion for rehearing, which was denied by said Supreme Court of Arizona on the 13th day of January, 1944. Thereupon the mandate of said Supreme Court duly issued, addressed to said Superior Court, directing further proceedings to be had in conformity with said decision dated December 23, 1943.

4. In obedience to the decision and mandate of the Supreme Court of Arizona, said Superior Court, on February 5, 1944, rendered and entered its judgment, declaring said Arizona Train Limit Law to be valid and constitutional, and imposing upon your petitioner as defendant penalties in the aggregate sum of \$500.00, for and on account of the asserted violations of said Train Limit Law set forth in the complaint in this cause.

5. In said cause there is drawn in question the validity of a statute of the State of Arizona, on the ground of its being repugnant to the Constitution, laws or treaties of the United States, and the decision is in favor of its validity: in that your petitioner, as defendant in the Superior Court, and as appellee in the proceedings before the Supreme Court of Arizona, has at all times maintained, from the outset of the cause, and as a matter of affirmative defense to the complaint in said cause, and now maintains, that the Arizona Train Limit Law, the statute of Arizona aforesaid upon which the prosecution is predicated, infringes upon and violates the Commerce Clause (Article I, Section 8, Paragraph 3) of, and the Due Process Clause of the 14th Amendment (14th Amendment, Section 1) to, the Constitution [fol. 6326] of the United States, and also infringes upon and is in conflict with certain federal statutes enacted by Congress pursuant to its powers under the Commerce Clause, to wit, the Federal Safety Appliance Act (45 U. S. Code, Sections 1, 9), and the Safety Section (Section 25) of

Part I of the Interstate Commerce Act (49 U. S. Code, Part I, Section 25).

6. Petitioner further represents and shows that the decision of the Supreme Court of Arizona, herein dated December 23, 1943, and the judgment of the Superior Court herein dated February 5, 1944, entered in obedience to said mandate of said Supreme Court of Arizona, were and each of them was erroneous, in that this Court failed to hold and decide that said ~~Arizona~~ Train Limit Law was and is wholly unconstitutional and void, because in violation of each and all of the provisions of the Constitution of the United States hereinbefore referred to, and also an infringement upon and in conflict with the statutes of the United States hereinbefore particularly referred to.

Wherefore, petitioner prays for the allowance of an appeal from the Supreme Court of the State of Arizona (the highest court of said State) to the Supreme Court of the United States, in order that the decision of said Supreme Court of the State of Arizona may be examined and reversed, and also prays that a transcript of the record, proceedings and papers in this case, duly authenticated by the Clerk of the Superior Court of the State of Arizona, in and for the County of Pima (being the clerk of the court possessed of the record), may be sent to the Supreme Court of the United States, as provided by law.

Petitioner, desiring the appeal to be a supersedeas, prays an order touching the security to be required of it, and the approval of such bond as required in the case.

The errors upon which your petitioner claims to be entitled [fol. 6327] titled to an appeal are those above indicated, and are fully set forth in the assignment of errors filed herewith.

Dated March 7th, 1944.

Cleon T. Knapp, James P. Boyle, B. G. Thompson,
Tucson, Arizona; C. W. Durbrow, Burton Mason,
San Francisco, California, Attorneys for Petitioner and Proposed Appellant in the Supreme Court of the United States.

[fol. 6328] [File endorsement omitted]

IN THE SUPREME COURT OF ARIZONA

[Title omitted]

ASSIGNMENTS OF ERROR—Filed March 8, 1944

Southern Pacific Company, a corporation, the above named appellee, assigns the following errors in the record and proceedings in this cause:

1. The Supreme Court of the State of Arizona erred in its decision and opinion herein, dated December 23, 1943, in failing to hold and conclude that that certain statute of the State of Arizona, known as the Arizona Train Limit Law, (enacted in 1912, and now codified and republished as Section 69-119, Arizona Annotated Code, 1939), which statute prohibits, under penalty, the operation within the State of Arizona of trains of more than 70 freight or other cars, exclusive of caboose, or passenger trains of more than 14 cars, is wholly void, invalid and unconstitutional, and in violation of the Commerce Clause (Article 1, Section 8, Paragraph 3) of the Constitution of the United States, because said Train Limit Law undertakes to and does regulate a subject matter over which exclusive legislative jurisdiction was and is vested in the Congress of the [fol. 6329] United States by said Commerce Clause and thereby invades the exclusive legislative field of Congress; in that the subject of the length and consist of interstate trains is one which requires a general or national system and uniformity of regulation, if such regulation should for any reason be required.

2. The Supreme Court of the State of Arizona erred further, in its decision and opinion aforesaid, in failing to hold and conclude that said Train Limit Law is invalid and unconstitutional, and in violation of said Commerce Clause, because its necessary and inevitable effect is to regulate and control the length and consist of the interstate railroad trains operated over appellee's lines extraterritorially, that is to say, not only within Arizona, but also in adjoining portions of the States of California and New Mexico, and in the State of Texas.

3. The Supreme Court of the State of Arizona erred further, in its decision and opinion aforesaid, in failing to hold

and conclude that said Train Limit Law is invalid and unconstitutional, and in violation of said Commerce Clause, because its necessary, practical, and inevitable effect is, and continues to be, directly substantially, and unreasonably to interfere with, delay, regulate and obstruct the operation and movement of appellee's interstate trains, both within and without Arizona, and to impair the use and usefulness of the transportation facilities employed by appellee in the transportation of interstate commerce from, to, and across the State of Arizona.

4. Said Supreme Court of the State of Arizona erred further, in its opinion and decision aforesaid, in failing to hold and conclude that said Train Limit Law is invalid and unconstitutional, and in violation of said Commerce Clause, because its necessary and inevitable effect is, and continues to be, to impose direct, substantial, and unreasonable financial burdens upon the interstate commerce carried on by appellee both within and without Arizona, and thus further [fol. 6330] to impair the use and usefulness of the transportation facilities employed by appellee in the transportation of interstate commerce from, to, and across the State of Arizona.

5. Said Supreme Court of the State of Arizona erred further, in its opinion and decision aforesaid, in failing to hold and conclude that said Train Limit Law, to the extent that it has, or may have, or is intended or claimed to have, the effect of limiting the number of cars in a train to the maximum number which can be safely controlled or stopped in one train, by the use of the types of air brakes and their appurtenances now employed on such trains, or by any other form of train-control or other safety devices, is void and unenforceable against appellee, because it attempts to and does enter a legislative field already entered, and therefore occupied by Congress, and thereby conflicts with and infringes upon existing legislation enacted by Congress pursuant to its powers under the Commerce Clause of the Constitution: The Congress having, under the provisions of the Safety Appliance Act, as amended (45 U. S. Code, Sections 1, 9) and the provisions of Section 25 of Part I of the Interstate Commerce Act (49 U. S. Code [I, Sec. 25]), delegated to the Interstate Commerce Commission full and complete authority to investigate and determine the ade-

quacy of the air brakes and their appurtenances, and each and all other forms of train control, automatic train-stop, and other safety devices used or proposed to be used on locomotives, cars, and trains operated in interstate commerce, and by order to prescribe the form and type thereof and from time to time to issue such amendatory and supplementary orders as said Commission may deem necessary or desirable in the exercise of the power thus delegated to it, which power and authority said Commission has duly exercised; and the Congress having, more particularly, in and by such statutes, necessarily empowered said Commission [fol. 6331] to determine whether the types of air brakes and their appurtenances presently used or proposed to be used upon trains in interstate commerce are or will be adequate and effective, safely and properly to control and to stop trains of the lengths now being operated or proposed to be operated by appellee in interstate commerce, both within and without the State of Arizona.

6. Said Supreme Court of the State of Arizona erred further, in its opinion and decision aforesaid, in failing to hold and conclude that said Train Limit Law is invalid and unconstitutional, and in violation of said Commerce Clause, and also in violation of the Due Process Clause of the 14th Amendment to the Constitution of the United States in that said Train Limit Law operates and will continue to operate arbitrarily and unreasonably to deprive appellee of its property without due process of law; because said law fixes maximum lengths very much lower than those which generally obtain elsewhere throughout the United States, under operating conditions substantially similar to those upon appellee's lines in Arizona; makes no allowance for grade or other operating conditions, or for the construction, type, weight, or lengths of the cars composing the trains, or whether such cars are loaded or empty, or if loaded, the weights of the loads therein; imposes a great, substantial, and wholly unreasonable burden of expense upon, interference with, and delay to interstate commerce, and impairs the use and usefulness of appellee's transportation facilities; and bears no reasonable relation to health or safety, and does not and will not either eliminate or to any substantial extent reduce any existing hazard, but on the contrary does and will create new and increases existing hazards and dangers of railroad operation.

7. Said Supreme Court of the State of Arizona erred further, in its opinion and decision aforesaid, in holding and concluding that said Train Limit Law is valid and constitutional, and that the "findings and judgment of the trial court to the effect that the Train Limit Law is unconstitutional were in error."

8. To the extent that the aforesaid opinion and decision of said Supreme Court of the State of Arizona are, or may be, intended or construed to be a disapproval or reversal of the findings of fact (as distinguished from the conclusions of law) made and adopted by the trial court (the Superior Court of the State of Arizona, in and for the County of Pima) in this cause, or of any part or portion of said findings of fact, said Supreme Court of Arizona erred further in its said opinion and decision, in holding and deciding that said findings of fact of the trial court, or any of them, were or are in any respect in error, or that other and inconsistent or opposing findings of fact were or are required and proper upon the basis of the evidence of record in this cause; such holding by said Supreme Court of the State of Arizona, to the extent that its opinion and decision are or may be construed as herein indicated, having constituted a denial to the appellee of due process of law, within the meaning of the Due Process Clause of the 14th Amendment to the Constitution of the United States.

9. Said Supreme Court of the State of Arizona erred further, in and by its opinion and decision aforesaid, in reversing the judgment in favor of appellee duly rendered and entered on February 11, 1942, by said trial court, wherein and whereby said trial court declared that said Train Limit Law is invalid and unconstitutional upon each and all of the grounds of such invalidity specified in the foregoing assignments of error numbers one to six, inclusive; and in issuing its mandate to said trial court, dated January 14, 1944, wherein and whereby it ordered and directed said Superior Court to enter judgment against appellee, and in favor of appellant.

For which errors this petitioner prays that the said opinion and decision of the Supreme Court of the State of [fol. 6333] Arizona, dated December 23, 1943, and said judgment of the Superior Court of the State of Arizona, in and for the County of Pima, dated February 5, 1944, en-

tered by said Superior Court in obedience to the aforesaid opinion and decision of said Supreme Court of the State of Arizona and the mandate of said Supreme Court issued pursuant thereto, in the above entitled cause, be reversed, and judgment rendered in favor of the said appellee.

Dated: March 7th, 1944.

Cleon T. Knapp, James P. Boyle, B. G. Thompson,
Tucson, Arizona; C. W. Durbrow, Burton Mason,
San Francisco, California, Attorneys for Southern
Pacific Company, a corporation, (petitioner, and
proposed appellant in the Supreme Court of the
United States).

[fol. 6334] [File endorsement omitted]

IN THE SUPREME COURT OF ARIZONA

[Title omitted]

ORDER ALLOWING APPEAL—Filed March 8, 1944.

The petition of Southern Pacific Company, a corporation, the above named appellee, for an appeal in the above cause to the Supreme Court of the United States from the Supreme Court of the State of Arizona, and the assignment of errors filed therewith and the record in said cause having been considered, it is

Ordered that an appeal be and is allowed to the Supreme Court of the United States from the Supreme Court of the State of Arizona, as prayed in said petition, and that the Clerk of the Superior Court of the State of Arizona, in and for the County of Pima, being the Clerk of the Court possessed of the record, shall prepare and certify a transcript of the record and proceedings in the above cause, and transmit the same to the Supreme Court of the United States within sixty (60) days from the date hereof.

It is further ordered that said petitioner, Southern Pacific Company, a corporation, shall give good and sufficient security in the sum of \$2,000.00, that said petitioner shall prosecute said appeal to effect, and if said petitioner fail [fol. 6335] to make its plea good, it shall answer for all damages and costs.

The said petitioner now presenting a surety bond, in the sum of \$2,000.00, with the Saint Paul-Mercury Indemnity Company, a corporation, named as surety, it is

Ordered that the same be and is hereby approved, and that this appeal shall operate as a supersedeas.

Dated March 7th, 1944.

A. G. McAlister, Chief Justice of the Supreme Court
of the State of Arizona.

[fol. 6336-6340] Bond on appeal for \$2,000.00, filed March 8, 1944, omitted in printing.

[fol. 6341-6342] Citation in usual form showing service on Joe Conway, et al. omitted in printing.

[fol. 6343] [File endorsement omitted]

IN THE SUPREME COURT OF ARIZONA

[Title omitted]

PRAECIPE FOR TRANSCRIPT OF RECORD—Filed March 2, 1944

To the Clerk of the Superior Court of the State of Arizona, in and for the County of Pima:

As the Clerk of the Court possessed of the record in the above entitled cause, you are hereby requested to prepare and certify a transcript of the record in said cause to be filed in the Supreme Court of the United States, pursuant to an appeal to said Supreme Court of the United States heretofore allowed in said cause on the 7th day of March, 1944, and to include in said transcript of record in the order given below the following and no other papers and exhibits; to-wit:

1. The complaint of the State of Arizona as plaintiff herein.

2. The order of the Superior Court staying the plaintiff from prosecuting any other proceedings to

enforce the provisions of the Arizona Train Limit Law.

[fol. 6344] 3. The answer of Southern Pacific Company as defendant herein.

4. The full and complete reporter's transcript of the proceedings had at the trial of the case, consisting of type-written pages numbered from 1 to 5309, inclusive, bound into eighteen volumes.

5. All original exhibits tendered in evidence by either party and received in evidence by the trial court, being 379 exhibits, identified by the following numbers:

1-15, both inclusive; 15-39, both inclusive; 42-202, both inclusive;

204 and 205; 207-220, both inclusive, 222-328, both inclusive;

334-370, both inclusive; 382-397, both inclusive; 399-402, both inclusive;

and excluding therefrom twenty-three exhibits which were marked for identification and not received in evidence, the same being exhibits identified by numbers as follows:

14, 40, 41;

203, 206, 221;

329-333, both inclusive; 371-381, both inclusive; and 398.

6. The findings of fact and conclusions of law made and adopted by the Superior Court, under date of February 11, 1942, and filed on said February 11, 1942, and bearing the style and designation "Court's Findings of Fact and Conclusions of Law".

7. The judgment of the Superior Court, rendered and entered on February 11, 1942.

8. The memorandum opinion of the Superior Court, rendered and filed on February 11, 1942.

9. The notice of appeal from the judgment of the Superior Court, filed on April 9, 1942.

10. The opinion of the Supreme Court of the State of Arizona, dated December 23, 1943.

[fol. 6345] 11. The dissenting opinion of Honorable Henry D. Ross, Judge of the Supreme Court of Arizona, dated January 13, 1944.

12. The mandate of the Supreme Court of Arizona, directed to the Supreme Court, dated January 14, 1944.

13. The judgment of the Superior Court, entered in obedience to said mandate of the Supreme Court, dated February 5, 1944.

14. The petition of Southern Pacific Company for the allowance of an appeal to the Supreme Court of the United States.

15. The assignment of errors filed by Southern Pacific Company as appellant, in connection with said appeal.

16. The statement with respect to jurisdiction filed by Southern Pacific Company in connection with said appeal; and each and every other statement or document filed under authority of Rule 12 of the Rules of the Supreme Court of the United States.

17. The order of the Chief Justice of the Supreme Court of the State of Arizona, allowing the appeal to the Supreme Court of the United States, and fixing the bond upon such appeal.

18. The bond upon appeal to the Supreme Court of the United States.

19. The citation upon appeal to the Supreme Court of the United States.

20. The statement served upon the State of Arizona, as proposed appellee, directing attention to the provisions of paragraph 3 of Rule 12 of the Rules of the Supreme Court of the United States, together with the acknowledgment of service, in the name and on behalf of the State of Arizona, as appellee, of the documents served upon it pursuant to the [fol. 6346] the provisions of paragraph 2 of Rule 12 of said Rules of the Supreme Court of the United States.

21. This praecipe for transcript of record.

Dated March 7, 1944.

Cleon T. Knapp, James P. Boyle, B. G. Thompson,
Tucson, Arizona. C. W. Durbrow, Burton, Mason,
San Francisco, California. Attorneys for petitioner and proposed appellant in the Supreme Court of the United States.

Due service of the foregoing Praecipe for Transcript of Record and receipt of a copy thereof are hereby acknowledged this 7th day of March, 1944.

Joe Conway, Attorney General of the State of Arizona, by Earl Anderson, Assistant Attorney General; Chas. L. Strouss, of Counsel. Attorneys for the State of Arizona (appellee) proposed appellee of the Supreme Court of the United States.

[fol. 6347]

[File endorsement omitted]

IN SUPREME COURT OF ARIZONA

[Title omitted]

PROPOSED APPELLEE'S PRAECIPE FOR ADDITIONAL RECORD—
Filed March 16, 1944

To the Clerk of the Superior Court of the State of Arizona,
in and for the County of Pima:

You are hereby requested to incorporate into the transcript of record, on the appeal herein, in addition to the portions of the record indicated by proposed appellant herein by its praecipe, to be included in the transcript of record on appeal, the following:

Exhibits 371-381, both inclusive, and 398, the same being twelve of the twenty-three exhibits, referred to in item 5 of proposed appellant's praecipe, which were marked for identification and not received in evidence.

Dated March 14, 1944:

Joe Conway, Attorney General of the State of Arizona; By Earl Anderson, Assistant Attorney General; Charles L. Strouss, Of Counsel. Attorneys for the State of Arizona, proposed appellee.

[fol. 6348] Due service of the foregoing Proposed Appellee's Praecipe for Additional Record and receipt of a copy thereof are hereby acknowledged this 16th day of March, 1944.

Cleon T. Knapp, James P. Boyle, B. G. Thompson,
C. W. Durbrow, Burton Mason, Attorneys for
proposed Appellant.

[fols. 6349-6352] Clerk's Certificate to foregoing transcript omitted in printing.

[fol. 6353] IN THE SUPREME COURT OF THE UNITED STATES

[Title omitted]

STATEMENT OF POINTS TO BE RELIED UPON—Filed April 22,
1944

Now comes Southern Pacific Company, a corporation, the appellant in the above-entitled cause, and adopts its assignments of error as its statement of points to be relied upon, and states that the whole of the record as filed, is necessary for the consideration of the case, and should be printed in its entirety, in accordance with the stipulation of the parties dated April 5, 1944, except for those documents and papers specified in said stipulation as unnecessary to be printed.

Dated April 17, 1944.

Southern Pacific Company, a corporation, Appellant,
Cleon T. Knapp, C. W. Durbrow, Burton Mason,
Attorneys for Appellant.

[fol. 6354] AFFIDAVIT OF SERVICE BY MAIL

STATE OF CALIFORNIA,

City and County of San Francisco, ss:

Burton Mason, of lawful age, being first duly sworn, on his oath deposes and says that he is one of the attorneys of record for Southern Pacific Company, a corporation, the appellant named in the foregoing Statement of Points to be Relied Upon, and as such attorney makes and files this affidavit of service; that on the 17th day of April, 1944, he served upon Joe Conway, Esq., as Attorney General of Arizona, and upon Earl Anderson, Esq., as Assistant Attorney General, and upon Charles L. Strouss, Esq., (each and all of whom reside and have their offices in Phoenix, Maricopa County, State of Arizona), in their capacities as attorneys for the appellee named in said statement, one copy each of the Statement of Points to be Relied Upon by appellant in said cause, as filed with the Clerk of the Supreme Court of the United States pursuant to Paragraph 9 of Rule 13 of the Rules of said Supreme Court, by enclosing said copies of said Statement in sealed envelopes respectively addressed to said attorneys for appellee, and

depositing the same in the United States post office at the City of San Francisco aforesaid, with the postage thereon fully prepaid; that on the 17th day of April, 1944, there was and is a regular and established daily mail service, from the City of San Francisco aforesaid, to the City of Phoenix, Arizona.

/Burton Mason.

Subscribed and sworn to before me this 17th day of April, 1944. A. T. Whittle, Notary Public in and for the City and County of San Francisco, State of California.

[fol: 6355] [File endorsement omitted.]

[fol. 6356] IN THE SUPREME COURT OF THE UNITED STATES

[Title omitted]

STIPULATION AS TO PRINTING OF RECORD—Filed April 22,
1944

It is hereby stipulated, by and between the above-named appellant and its attorneys, and the above-named appellee and its attorneys, that the entire record in the above entitled case is deemed necessary to be printed for the consideration of the Court, except the following documents and papers, which the Clerk is requested to omit from such printing, viz:

Exhibits received in evidence, and identified by number as follows:

8, 9, 152, 153, 175, 300-304, both inclusive, 306-312, both inclusive, 319, 320, 430-349, both inclusive, 352-361, both inclusive, 385, and 399-402, both inclusive.

Exhibits offered but not received in evidence, marked for identification by numbers as follows:

371-381, both inclusive, and 398.

It is further stipulated that the documents and papers above mentioned to be omitted from the printed record shall be preserved by the Clerk and may be referred to by counsel or the Court, if deemed necessary, during the course of the

[fol. 6357] argument, or in brief, or otherwise during the disposition of the cause.

Dated April 5, 1944.

Southern Pacific Company, a corporation, Appellant,
Cleon T. Knapp, C. W. Durbrow, Burton Mason,
Attorneys for Appellant. State of Arizona, Ap-
pellee, Joe Conway, Attorney General; Earl An-
derson, Assistant Attorney General; Charles L.
Strouss, of Counsel; Attorneys for Appellee.

[fol. 6358] [File endorsement omitted]

SUPREME COURT OF THE UNITED STATES, OCTOBER TERM, 1944

No. 56

[Title omitted]

ORDER NOTING PROBABLE JURISDICTION—May 1, 1944

The statement of jurisdiction in this case having been submitted and considered by the Court, probable jurisdiction is noted.

Endorsed on Cover: File No. 48,371, Arizona, Superior Court, County of Pima. Term No. 561. Southern Pacific Company, Appellant, vs. State of Arizona, ex rel. Joe Conway, Attorney General of the State of Arizona. Filed April 12, 1944. Term No. 56 O. T. 1944.

(3012)

